

# Railway Age

AND RAILWAY REVIEW

FIRST HALF OF 1928—No. 11

MARCH 17, 1928

SEVENTY-THIRD YEAR

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## Why some railroads don't use alloy steels

The greatly increased capacity of modern locomotives has taxed to the limit the physical properties of straight carbon steel. Many roads have already attacked this problem by the adoption of alloy steels for such important parts as main and side rods, crank pins, axles, and piston rods.

To say that this move has solved the problem successfully in all cases would be to ignore the fact that some railroads have had experiences with certain alloy steels that were so directly opposed to the results anticipated that they have abandoned the use of these higher-grade materials. In doing so they have condemned, unjustly, a material that the trend in locomotive design seems to dictate must be adopted in the near future.

*The fact that some progressive railroads and the entire automotive industry have successfully utilized alloy steels leads to the conclusion that this material possesses highly desirable qualities. Why then have other railroads failed in their effort to take advantage of these qualities?*

The problem of using alloy steels is one of the selection of the proper grades, intelligent processing during fabrication and the still more important factor of their correct handling in service and maintenance. The successful use of any alloy steel is dependent upon first obtaining steel especially adapted to the service for which it is intended, of consistent analysis and physical characteristics, then on properly han-

dling it during the forging process and finally on subjecting it to the correct heat treatment.

*An alloy steel is a specialized product and a mill that has successfully produced straight carbon steel over a period of years is not, by virtue of that manufacturing experience, necessarily qualified to produce alloy steel any more than a locomotive builder, by virtue of years of mechanical manufacturing experience, is especially qualified to produce a successful motor car.*

Those alloy steels principally used in locomotive construction; namely, chrome-vanadium, chrome nickel and carbon vanadium, are sensitive steels which react favorably or otherwise to the accuracy of the fabricating process. In adapting these materials the railroads were unprepared for their use by the absence of adequate heat treating facilities and of a trained personnel.

It would seem that the problem can be materially simplified in its solution by a recognition of these factors: the purchase of alloy steel billets from manufacturers of recognized ability in the production of this specialized product; the installation of correct and adequate heat treating plant facilities and, most important of all, the addition to present forge shop forces of men trained in the handling of this comparatively modern material. Those roads that are successfully using alloy steels have accomplished satisfactory results through these methods.

Any railroad interested in the proper heat-treatment of steels can find a simple solution of this problem. The Interstate Metallurgical Service will be glad to consult with any railroad on the choice of equipment and the training of personnel.

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# Railway Age

Vol. 84 March 17, 1928 No. 11



On the Lackawanna

## Contents

### The Railways' Newest Passenger Rival ..... Page 616

An article telling of operations of Stout Air Services, Inc., which has carried passengers between Detroit and Grand Rapids for a year.

### Automatic Interlockers Save Money ..... 619

L. B. Porter, assistant signal engineer, Chicago, Milwaukee, St. Paul & Pacific, tells of annual saving of from 70 to 100 per cent.

### Moving the Canadian Grain Crop ..... 621

Part II of an article telling how the Canadian roads handle huge grain crop.

#### EDITORIALS:

Two Pertinent Questions	611
North Shore Line Carried Record Traffic in 1927	611
Eliminating "Unavoidable Delays"	611
It Can Be Done!	611
Designing Operation Facilities	612
Steam Operation Through Long Tunnels	612
Who Pays the Bill for Cut-throat Competition?	612
The Year's Construction Program	613
The Case of Mr. Esch	613
Need of a Railroad Policy	614

#### GENERAL ARTICLES:

The Railways' Newest Passenger Rival	616
Automatic Interlockers Save Money	619
Moving the Canadian Grain Crop, Part II	621
I. C. C. Not Concerned With Porters' Tips	628
Feedwater Heaters Reduce Pitting	629
Centralized Supervision of Office Equipment Economical, by W. L. Hanna	631

#### GENERAL ARTICLES—Continued

A Scientifically Designed Manganese Crossing	634
Diesel Engines for Railroad Traction, by D. L. Bacon	635
Freight Car Loading	638
Electric Trucks at Grand Central Terminal, by H. A. Currie	639
A Friction Spring for 50 and 70-Ton Trucks	640
Minority of Senate Committee Defends Mr. Each	641
An Air Operated Horn for Railway Service	642
A New Industrial Tractor	642
Accident Investigations July, August, September	643
Railroad Practice in 1842	644
Depreciation Hearings Resumed	645

#### COMMUNICATIONS AND BOOKS ..... 646

#### LOOKING BACKWARD ..... 647

#### ODDS AND ENDS OF RAILROADING ..... 648

#### NEWS OF THE WEEK ..... 649

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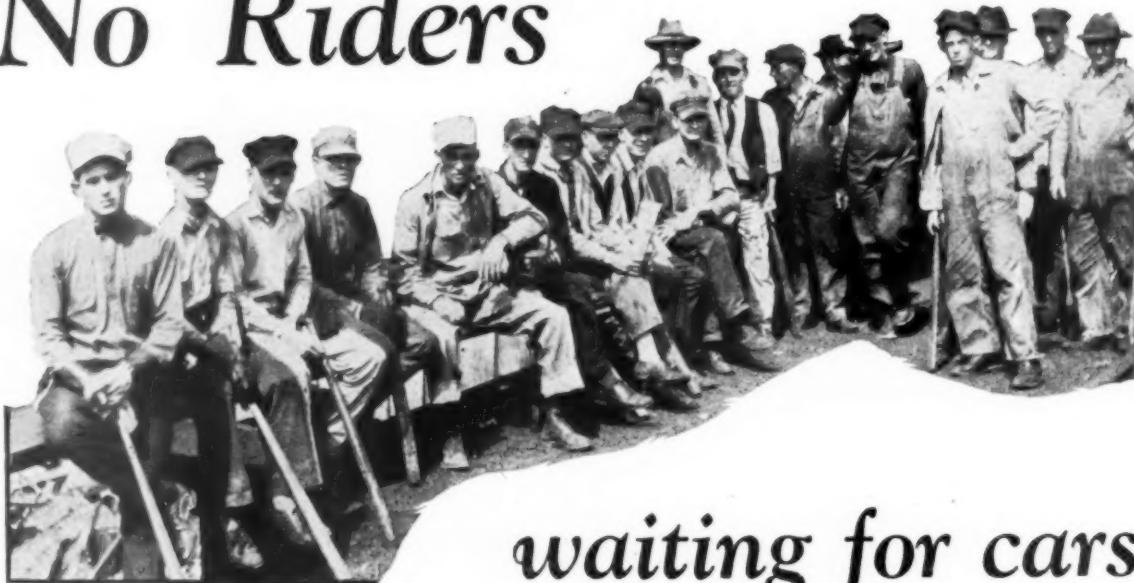
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and no cars  
waiting for riders*



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# Railway Age

Vol. 84, No. 11

March 17, 1928

Table of Contents Appears on  
Page 5 of Advertising Section

## Two Pertinent Questions

**T**HE following concise and convincing explanation of American industrial supremacy is quoted by R. M. Hudson, chief of the Division of Simplified Practice, Department of Commerce, in a recent news bulletin: "The industrial success of America rests on our willingness to throw out the old and inefficient and install the new and efficient. High wages have compelled us to adopt this policy because the only chance the American manufacturer has for survival in the world market is by employing machines to do his work." The first question which may be asked is, To what extent have American railroads, following the lead of our manufacturers, scrapped and replaced obsolete locomotives, cars, machinery, tools and equipment and reconstructed outgrown repair shops, engine terminals and other fixed facilities? While adequate earnings as well as an open-minded management are admittedly essential to any substantial improvement program, another natural query is, Are the railroads in all cases going ahead with the work of replacing the old and inefficient with the new and efficient as fast as conditions warrant? There are probably few roads which will not profit by a searching self-scrutiny in answering these two questions for their individual properties.

## North Shore Line Carried Record Traffic in 1927

**T**HE Chicago, North Shore & Milwaukee, commonly known as the North Shore Line, which is an electric railway extending from Chicago to Milwaukee, Wis., handled last year the largest volume of traffic, both passenger and freight in its history. It carried 10,865,823 passengers on its main line, an increase of 151,365 passengers over the number carried in 1926, and handled 843,000 tons of freight, a gain in one year of 186,000 tons. This record stands out especially because it was made in a year when railway traffic in general and particularly passenger traffic was less than in the previous year. Unremitting efforts toward the development of every possible source of freight and passenger traffic has been the outstanding characteristic of the North Shore Line's history. It has speeded up its trains and made them modern and comfortable. For the further development of its regular passenger business it has established motor coach feeder lines, which may have been somewhat unprofitable in themselves but which have brought much traffic to the main line of the railway. It has concentrated upon the development of special party business until special trains between Milwaukee and Chicago or intermediate points have become almost every-day occurrences. To develop its freight traffic it has established

off-line stations connected with the main line by tractor and trailer operation and has pioneered in a form of fast container operation. It has advertised its service consistently and effectively. The result of its efforts are shown in the record business which it handled last year.

## Eliminating "Unavoidable" Delays

**S**EVERAL advantages of the centralized system of dispatcher control have been set forth in articles published since an installation of this character was placed in service on the Ohio division of the New York Central last July. However, actual operating conditions are bringing to light still other advantages from time to time. Whereas the time lost previously by trains pulling into sidings and waiting for a meet was included in "unavoidable" delays, J. J. Brinkworth, superintendent of this division, in talking before the convention of the Signal Section, A. R. A., last week, stated that a check made recently showed that 70 per cent of the meets were now being made without either train stopping. This result is accomplished by the use of long sidings, with all main line switches power-operated and controlled from a central point by the dispatcher. In periods of heavy traffic as many as 50 trains are operated over this 40-mile section of a single track in a day. Many of these are heavy tonnage coal trains, which cost from \$3 to \$5 to stop, according to Mr. Brinkworth. A marked reduction in the number of train stops and the elimination of 70 per cent of the "unavoidable" delays on sidings, represent a saving that alone will pay a handsome return on an investment for an installation of the centralized dispatchers' control system on many sections of busy single-track lines over the country.

## It Can Be Done!

**I**N the interest of improved draft gear conditions and the resultant decrease in lading and equipment damage, the suggestion has been advanced that periodical dropping, inspection and repair of draft gears be made mandatory under an interchange rule. Most students of the subject feel strongly that such a plan would be impractical at the present time. There is nothing to prevent individual railroads, however, from embarking on programs of periodic draft gear inspection and maintenance on system-owned cars. This not only can be but is being done. One large railroad is working on a program whereby it is anticipated that all of the system cars will be inspected and faulty draft gear conditions remedied within a period of two years. Another progressive road removes, inspects and repairs draft gears

once in three years as cars are sent to shops or repair tracks, the date and station symbols being stenciled on the sills and a record kept of the work. After any car passes the three-year period its draft gears are removed and inspected when it is next found on repair or shop tracks. The master car builder on this road reports as follows regarding the feasibility of this practice: "The plan is entirely practical and draft gears are automatically taken care of by repair forces in the same manner that air brakes are cleaned and journal boxes repacked. In removing the gears periodically, an opportunity is afforded to inspect the draft gear attachments thoroughly and quite often defects are found and repaired which would otherwise pass unnoticed until final failure, and might result in break-in-twos." Experience indicates that where an extensive program for the improvement of draft gear conditions is inaugurated, the first result is a substantial increase in draft gear maintenance cost, but this expense is small in comparison with the savings made in reduced cost of repairing other car parts, less damage to lading and fewer road delays.

### Designing Operating Facilities

THE classic example of retribution is found in the case of the man who, as division engineer, designed a yard inefficient from an operating standpoint, and later, as division superintendent, was called upon to operate it efficiently. It is related the things he said to himself while overcoming the difficulties he himself was responsible for, were worth going miles to hear. But all this happened some time ago. Engineers today are not only more cognizant of operating matters, but the suggestions of operating officers are almost invariably solicited when the design of an operating facility is being considered. Following out the idea of co-operation in designing operating facilities, executive operating officers should not be content merely to pass along their own ideas. A general manager, whose road is now engaged in improving its operating facilities in a big way, recently outlined the idea very aptly when he said: "On my road we don't design anything until we have exhausted every possible source of suggestions. We consult with the general superintendent, the superintendent, trainmasters, yardmasters or freight agents, as the case may be. Nor do we overlook the switching foremen or the platform foremen. Everyone concerned in the operation of the facility in a supervisory capacity is given a chance to say what he thinks. Naturally, we receive a lot of useless or impractical suggestions, since these men are without engineering training, but we receive good suggestions as well. Many of these might not have occurred to us as readily as to the officers intimately connected with the operation of the facility. In fact, the practise has worked out so satisfactorily that we would not think of abandoning it on our railroad."

### Steam Operation Through Long Tunnels

WHILE the need for the improvement of operating conditions through long tunnels has often been the prime motive for the electrification of steam railways or certain portions of them, it is significant that trains are now being handled by steam locomotives through the two longest railroad tunnels in North America,

namely, the Rogers Pass tunnel on the Canadian Pacific, and the new Moffat tunnel on the Denver & Salt Lake. In these two cases, particularly in the latter, the element of a dense traffic, a vital factor in determining the justification for electrification, is lacking; but attention may well be directed to the marked improvement in ventilating technique which has been made since the time when electrification was first undertaken to overcome difficulties of steam operation through long tunnels in this country. At the new Moffat tunnel the fans are reversible so that the smoke and air move ahead of the trains, regardless of the direction in which they are moving. In contrast with the policy in the two tunnels mentioned is that being followed in connection with the building of the new Cascade tunnel of the Great Northern where plans for electrification form an important feature of the tunnel project. It is obvious that conditions obtaining at the Moffat tunnel and the new Cascade tunnel are entirely different and that the true test of the effectiveness of the ventilating system at the former will not come until it is required to carry a much heavier train movement than that which will be demanded by purely local traffic. It is possible also that electrification may be justified eventually on the ground of increased track capacity and greater economy of operation over the 40 miles of the two per cent approach grade from the east, rather than by reason of unsatisfactory ventilation. But these also are considerations with which the Denver & Salt Lake is not confronted at this time.

### Who Pays the Bill for Cut-throat Competition?

EDWARD N. HURLEY, former chairman of the United States Shipping Board, cannot be accused of unfriendly feeling toward the American merchant marine. Yet he has advocated some measure of regulation for coastwise and intercostal shipping, believing that such action might tend to stabilize the business and promote its development along sound economic lines. Now comes a spokesman for the Shipper's Conference of Greater New York, and condemns the proposal as impractical. While it may be true, he says, that there are now more vessels in the intercostal service than the traffic warrants, "it is simply a case of excessive competition which eventually will adjust itself either through a proper division of tonnage or through the weak lines being eliminated from the field." Probably some shippers are profiting, at least temporarily, from the conditions now prevailing. They would doubtless profit, also temporarily, if railroad regulation were abolished and the railroads could be induced to enter into cut-throat rate competition with each other. They are similarly profiting from the lack of system and organization in motor truck transportation. Yet does it follow that a temporary advantage in low rates is really to the ultimate advantage of the shipper? Should he not seek also at least sufficient prosperity for the carrier to enable the carrier constantly to improve his service and efficiency? Is it not entirely possible that the stabilization brought about by regulation—not only for intercostal shipping, but also for motor truck service—might result in savings which would ultimately mean more to the shipper than his present profits from unrestricted competition for his patronage? Duplication of facilities is costly. Someone pays for it. Is it not reasonable to assume that the shipper is among the contributors?

## The Construction Program for 1928

EARLIER in the year the forecast was made in these columns that 1928 would be characterized by more than normal activity in the way of improvements, approximating in this respect the two years immediately preceding. In a later issue reference was made to the fact that this season's rail orders showed a slight increase over those of a year ago, indicating that roadway maintenance expenditures would at least equal in liberality those of a year ago, which in themselves established a new high record. Within recent weeks the number of large construction projects authorized bears out the forecast with reference to major additions and betterment work.

Since February 1 the columns of the *Railway Age* have carried information about the inauguration of work on the union station project at Cincinnati, Ohio, involving an ultimate expenditure of \$35,000,000; and about the awarding of contracts by the Louisville & Jeffersonville Bridge and Railway Company (a joint corporation of the Chesapeake & Ohio and the Big Four) for the reconstruction of a bridge across the Ohio river at Louisville, Ky., at a cost of \$3,250,000 and by another company for a bridge across the Mississippi river at Vicksburg, which is to be used in part by the Illinois Central, costing \$3,000,000. The Missouri Pacific has taken bids for the construction of a bridge across the Arkansas river near Little Rock, Ark., which is estimated to cost \$2,000,000; has awarded contracts for 16.6 miles revision of line west of St. Louis, Mo., which will involve an expenditure of \$4,885,000 and has appropriated \$1,100,000 for flood protection measures between Little Rock and Texarkana. This road is also participating in the construction of union station facilities at Texarkana which are estimated to cost nearly \$2,000,000; while the St. Louis Southwestern, which is also participating in this project, has announced that it will spend \$2,900,000 this year for the revision of grades on its Texas line.

Within the last month the Union Pacific has awarded a contract for the construction of 54 miles of line in Wyoming at a cost of \$2,500,000 and the Southern Pacific has let a contract for the revision of 19 miles of line near Globe, Ariz., at an outlay of \$2,400,000; while the Rock Island has just authorized the extension of its Amarillo-Liberal line 34 miles beyond its present terminus.

Of outstanding interest in the East is the Pennsylvania's announcement that it will undertake an improvement program in Baltimore involving additional tunnels under the city and the enlargement of other facilities, all of which are estimated to cost \$15,000,000. Likewise, the Reading and the Baltimore & Ohio are understood to be approaching an agreement with the city of Philadelphia for the enlargement of their respective terminals in that city, which projects will involve the expenditure of large sums of money.

These are typical of a large amount of work that is now being launched. They are exclusive of projects of similar magnitude now under way, such as the Pennsylvania's new passenger terminal in Philadelphia, work on which was undertaken somewhat more than a year ago; the Cleveland union station now approaching completion; the realinement of the Denver & Rio Grande Western's main line which has been in progress for three years; the Big Four's engine terminal

at Cincinnati, which is practically completed after an expenditure of \$3,000,000; the Lackawanna's bridge over the Hackensack river, for which a similar amount has been appropriated; the Great Northern's tunnel through the Cascade mountains and the realinement of the east approach thereto, costing more than \$14,000,000; the Louisville & Nashville's extension from Chevrolet, Ky., to Hagens, Va., involving very heavy work; the Missouri Pacific's general office building at St. Louis, costing \$2,000,000 and now approaching completion; the New York Central's passenger terminal at Buffalo, for which \$14,000,000 has been appropriated and the St. Louis-San Francisco's extension to Penscola.

Improvements of this magnitude demonstrate most forcibly the realization of railway managements that they must constantly modernize their properties to keep them abreast of the demands that are being made upon them for service with maximum economy.

## The Case of Mr. Esch and His Reappointment

AFTER all that has recently occurred, refusal of the Senate to confirm the reappointment of Commissioner Esch of the Interstate Commerce Commission would be one of the most serious blows ever dealt to fair and constructive regulation of railways. It would be a condemnation of his conduct as a commissioner upon wholly insufficient and indefensible grounds, and if it had any effect upon the future of the commission would tend to make its policy subservient to sectional and political, instead of national and economic, considerations.

Among the most important qualifications of a commissioner are high character, unusual ability, fairness of purpose and special knowledge of the problems with which the commission deals. Mr. Esch could not be condemned for lack of these qualities. Everybody knows he possesses them. For what, then do his opponents propose to condemn him?

They criticize him for having voted in a certain way in the Lake Cargo coal rate case, and because he voted differently when this case was last decided from the way in which he had voted once before. The *Railway Age* has criticized the last decision of the commission in this case and the reasons for it. But should a member of the commission be retired because of the way he voted in a particular case?

Congress created the commission mainly to regulate rates because all experience and reason showed that a small body of men appointed because of their special qualifications, and devoting themselves entirely to hearing evidence regarding rate question and studying transportation conditions and problems, would be far more competent to decide how rates should be made than Congress, which has questions of innumerable kinds to consider and most of whose members have little or no knowledge of transportation conditions and problems. The commission may decide wrong in a particular case. Mr. Esch may have voted wrong in this case. But is the Senate competent to decide whether the commission has decided right, or one of its members has voted right, in a particular case? Obviously not.

If the Senate is going to set itself up as a judge re-

garding Mr. Esch's vote in this case is it going to follow in future the precedent thus set, and confirm or reject other nominees to the commission according to the way they have voted in particular cases, or may be expected to vote? There is just as much reason or lack of reason why it should do so in one case as in another. If it is going to make a practice of doing this the independence and value of the commission as a regulating body will be destroyed.

But, it is said, the last decision of the commission in the Lake Cargo case was an attempt to equalize prosperity in different parts of the coal mining industry; therefore the decision was economically and legally unsound; and Mr. Esch should be condemned because he voted for it. We agree that it was economically unsound, but was it legally unsound? That raises a question as to whether the commission should be governed entirely by the rate-making provisions of the Act to Regulate Commerce or should be influenced also by the Hoch-Smith resolution. Obviously, as it is an administrative agent of Congress, it should be influenced by the Hoch-Smith resolution as long as it is in existence. Now, nothing could be plainer than that if the Hoch-Smith resolution means anything different from other provisions of law then it means the commission should arbitrarily use freight rates to equalize prosperity in different industries, if not in different parts of the same industry.

The Senate not only passed the Hoch-Smith resolution three years ago, but did so without a word of discussion. Where then were the senators who now condemn Mr. Esch because apparently he believes that they meant what they said in the Hoch-Smith resolution? Did they pass this resolution solemnly declaring what was "to be the true policy in rate-making to be pursued by the Interstate Commerce Commission," and directing it to investigate and revise the entire freight rate structure of the United States, merely as a political gesture to placate the farmers? If so, why did not they say so? If those criticizing Mr. Esch and other members of the commission were doing so upon the ground that they have failed to carry out the regulatory policy announced by Congress in the rate-making provisions of the Transportation Act, or that they have disregarded decisions of the courts and provisions of law in adopting their policy of valuation of railways, there would be justification for their criticisms. But they are saying nothing about these important matters, and their condemnation of the effect being given by the commission to the Hoch-Smith resolution is, in the main, a condemnation of Congress for having passed it, and not of Mr. Esch or other members of the commission.

What ought to be done now in fairness to Mr. Esch and in the interests of fair, reasonable and constructive regulation is plain enough. Mr. Esch ought to be confirmed because his rejection now would set an example of successful sectional and political interference with the commission that would be demoralizing and dangerous in the highest degree. The Hoch-Smith resolution ought to be repealed, thereby withdrawing from the commission a direction given to it for political purposes, and still in effect, to so adjust rates, not as to make them fair as between the railways and between different sections and industries, but as to equalize profits in industry.

After all that has occurred, for the Senate to reject Mr. Esch, and for Congress at the same time to leave the Hoch-Smith resolution in effect, would be utterly inconsistent and contrary to every principle of fairness and sound railway regulation.

## Need of a Railroad Policy

THINGS are not going right in the railroad industry, and measures for correcting the wrong tendencies are not being adopted. If the reduced and inadequate net operating income being reported month after month were due entirely to a decline of freight business there would be no reason for concern. But this is not the case. It is due largely to more lasting causes—to causes which were operating when freight business was breaking records and will still be operating when freight business is again breaking records, unless their operation is arrested.

The railroads need a definite policy for dealing with these influences. That policy, if they are to have one, must come from their chief executives. One of the most extraordinary facts about the situation is that many of their executives criticize them for not having a policy, and yet nobody of sufficient influence starts a movement for the adoption of one.

They met in the spring of 1923 and adopted a policy for the expansion of facilities and the improvement of operation and service, which has been a great success. The producing and shipping public has benefited enormously by it. The railroads and their security owners benefited by it for awhile through increases in net operating income. They did not benefit as much by it as they should have, however, and recently they have not been benefiting by it at all. In each of the eight consecutive months ending with January net operating income was less than in the corresponding month of any year since 1924. In November and December it was less than in 1924, and in January it was less than in 1923.

The railways cannot expect to do as well when business is poor as when it is good. The trouble is they did not do well enough when it was good, and they are doing pretty badly now when it is poor.

Meantime, they are getting little sympathy from the public or their employees. The public sees the inflated quotations of railway stocks on the stock exchange, learns that here and there some road that is doing unusually well has increased its dividends, and, assuming that the railways are highly prosperous, seeks reductions of rates. The employees of the railways, largely owing to the same influences and the ambition of labor leaders, continue to seek and get advances in wages. The traffic officers of the railways, seeking competitive advantages, make downward "readjustments" of rates and give away money other departments of the railway have saved. And the railways are doing comparatively little to resist these influences because they have no unified policy.

### Valuation and Public Sentiment

The Interstate Commerce Commission favors a method of valuation to which all the railways are opposed. The lawyers of the O'Fallon railway, in the case of that road, contend that "dominant" weight should be given to cost of reproduction. The railways are being widely criticized because it is claimed they are trying to get a cost of reproduction valuation and a corresponding boost in rates. Such propaganda tends to turn public sentiment against them. But are all the railways trying to get valuation based mainly or solely on cost of reproduction? No authoritative declaration of policy upon this subject has come from any source that can speak for the railways as a whole

or any large group of them, because their executives and counsel do not agree among themselves. They are laying themselves wide open to the criticism that they are seeking an excessive valuation because they do not agree upon and state publicly what they want and why they think they ought to have it.

The Interstate Commerce Commission has persistently failed under the Transportation Act to so adjust rates as to enable the railways to earn, on the average, a fair return even on its own tentative valuation. Spokesmen for the railways are constantly criticizing it for this. Members of the Interstate Commerce Commission have, in effect, retorted that the initiative in rate-making should be taken by the railways, and that rates that are relatively too low should be advanced before proposals of horizontal advances are made. The railways are seeking some advances in rates, but they have no policy of meeting the challenge of the commission by seeking unitedly to advance rates to which they have good reason to believe the commission refers.

Every day complaints are heard from railway officers regarding downward "readjustments" of rates initiated by traffic officers of individual lines for illusory competitive reasons. Everybody agrees that in most cases the only effect of such reductions in the long run is to impair the earnings of all the competing lines affected. Traffic officers are their own severest critics. They are frank in finding fault with each other because of their aptitude for making competitive reductions of rates and their incapacity for agreeing upon needed and reasonable advances affecting powerful shippers and communities. No doubt the results would be beneficial if the railways would agree upon a policy of shooting at sunrise all traffic officers whose mistaken zeal in seeking traffic plainly tends to reduce rather than to increase earnings. But they have no such policy. Each railway complains about the activities of the traffic officers of competing lines, and the offenders are allowed to live and draw their pay for giving away earnings.

### Legislation Regarding Rates

Numerous measures are being introduced in Congress to change the rate-making provisions of the Transportation Act. Some of these propose to repeal Section 15-A. The bait offered to the more prosperous roads is the elimination of recapture. Other bills contemplate the abolition of the power of the Interstate Commerce Commission to fix rates. We are told that the purpose of such measures is to "restore to the railroads themselves more of the initiative in the making of rates, and to take away from the Interstate Commerce Commission a sort of super-guardianship power." What is meant by those who thus talk of "initiative in the making of rates"? The statement quoted was issued in advocacy of the abolition of the power of the commission to fix minimum rates. Nobody has proposed to restore to the railways any initiative in advancing rates. What do railway officers think of these proposals for changing the rate-making provisions? Would they rather have Section 15-A with recapture in it, or repeal of the rate-making provisions of Section 15-A in order to get rid of recapture? Are they in favor of the abolition of the power of the commission to fix minimum rates, when the only result probably would be to enable them to hang themselves with less interference from the commission? It is not possible at the present time to say the railways have any policy concerning rate legislation.

The Hoch-Smith resolution hangs as a menace over

the freight rate structure of many railways. The southern coal mine operators were not slow, when it was used as a reason for putting them at a competitive disadvantage, about discovering its perniciousness, and Senator Glass has introduced a resolution to repeal it. It is a greater threat to the railroads than to any other industry, but they have not been fighting unitedly for its repeal.

There is no such thing as a railroad labor policy. A few years ago one railway that was unusually prosperous suddenly made a voluntary increase in the wages of certain of its train service employees. That started a new wage cycle. Little or no consideration probably was given to the effects that would be produced on other railways that were less prosperous. Why should a prosperous railway care what may be the effect of what it does on other railways that are less prosperous? First, because the future prosperity of each railway will depend mainly on developments affecting all railways; secondly, because the relative degrees of prosperity enjoyed by different railways may be widely different tomorrow from what they are today; third, because every railway that disregards the interests of other railways invites others to do the same—an invitation which experience shows is likely to be accepted. Pride often goeth before a fall. Many railways and railway managements have thought they were so "good" that they could do what they liked regardless of others, but usually in the long run they have paid for it through reductions of their own net earnings.

### Excessive Individualism

The enumeration of things regarding which groups of railways and the railways as a whole need a policy but have none could be lengthened. There is still a great deal of individualism in the railroad business. Most of it is healthy and beneficial, but there is much of it that is simply individualism gone to seed. Every form of individualism that hinders them from cooperating in study of and action regarding the great problems of regulation, adjustment of rates, elimination of unnecessary competitive service, employee relations, public relations, and so on, is a menace to the industry.

Why is it that almost every other branch of public utility business in this country is getting better regulation and making better earnings than the railways? Is it not largely or mainly because, while the railways cooperate in the study of their technical problems and in the distribution of freight cars, they do not cooperate enough in studying and seeking solutions of many other problems of equal or greater importance?

The railways ought to have a policy not only of rendering shippers good service but of eliminating competitive wastes, stopping foolish voluntary rate reductions, resisting unreasonable wage demands and using every resource at their united command to get regulation that will enable each group to earn the fair return upon a fair valuation which they need for economic reasons and to which their owners are equitably and lawfully entitled.

If the railways, during the eight years the Transportation Act has been in effect, have never even earned the fair return on their tentative valuation that the Interstate Commerce Commission concedes they are entitled to, it is not entirely the fault of the commission. In union there is strength. The weakness of the railroads' position is largely due to lack of unity in thought and action regarding their problems that demand such unity.



*Loading Passengers at the Ford Airport, Dearborn*

## Railways' Newest Passenger Rival

*Stout Air Services, Inc., flies planes between Cleveland and Detroit—Operated between Detroit and Grand Rapids for one year*

THE Stout Air Services, Inc., is at the present time the largest air transport company engaged exclusively in the transportation of passengers in the United States. For one year, from August 1, 1926, to July 31, 1927, it operated on regular schedules for the transportation of passengers between Detroit, Mich., and Grand Rapids, largely as an experimental operation. On November 1, 1927, it began the operation of an air line between Detroit and Cleveland, Ohio, this service being in effect at the present time on a schedule of two round trips daily except Sunday.

The company is owned by a group of Detroit business men who originally financed the Stout Metal Airplane Company, but who decided to reinvest their money in the air transport line when the Ford Motor Company purchased their interest in the Stout Metal Airplane Company. William B. Stout, the designer and builder of the Stout all-metal airplane and vice-president of the Ford Motor Company subsidiary, is also president of the Stout Air Services.

### Cleveland-Minneapolis Line Originally Planned

The original intention of the Stout Air Services was to operate a passenger air line between Cleveland and Minneapolis, crossing the states of Ohio, Michigan and Wisconsin and Lake Michigan. On account of a lack of equipment of the Stout type at that time, this project was abandoned temporarily and the Detroit-Grand Rapids line was started, operating one plane, as an experiment.

The distance between Detroit and Grand Rapids proving so short as to allow little advantage in speed to the airplane as compared with railway trains, this service was discontinued after one year of operation and was replaced by the Detroit-Cleveland service. Because of the geographical location of these two cities, the service offers an unusual saving of time in transportation between Detroit and Cleveland. The fastest train time between Detroit and Cleveland, allowing 15 minutes at each end for time in transportation between hotels and stations, is 5 hours and 15 minutes. The airplane service is operated on a schedule requiring only 2½ hours for the trip, allowing 30 minutes at each end for transportation from hotel to airport. Plans for the future of the company contemplate the extension of

the Detroit-Cleveland line to Pittsburgh, Pa., and other eastern points and the institution of the originally planned Cleveland-Detroit Twin Cities service. These operations will be undertaken when suitable equipment is available and when a complete radio beacon and lighting service is installed.

### Flying 12,000 Miles Per Month

The Stout Air Services is at the present time flying its plane about 12,000 miles per month, this being based on two round trips per day, except Sunday, over the 128 mile route between Detroit and Cleveland. Ford-Stout all-metal enclosed cabin monoplanes of the three-engine type are used exclusively, the company owning four ships of this kind. These planes are equipped with comfortable chairs and seats accommodating 12 passengers and have windows which may be opened or closed, electric lights, heaters for cold weather use, toilet and washroom facilities, and a baggage compartment. The visibility from the cabin is excellent.

Each ship carries a flying mechanic in addition to the pilot, who relieves the pilot when necessary but who spends most of the time in flight, except when taking off



*The Stout Air Services Passenger Terminal and Office Building at Dearborn*

*The Motor Coach at the Right Carries Passengers to and from the Field and Detroit Hotels*

and landing, within the cabin looking after the comfort of the passengers and answering their questions, of which there are always a great many. When boarding the plane after signing the register, passengers are pro-

vided with a map of the course over which the planes fly, which enables them to determine the position of the ship at any time during the flight. A supply of newspapers is also carried in the ships for the use of passengers. These and other attentions to the comfort of passengers add much to their enjoyment of the flight.

At Detroit, the Stout Air Services uses the Ford airport at which it has a completely appointed passenger terminal and office building. Its hangar where the planes and engines are maintained and stored is located nearby. Passengers are carried between the center of the city of Detroit and the airport at Dearborn in a motor coach of the parlor type which picks up and discharges them at three of the principal hotels. This coach is operated for the Stout Air Services by the local railway company under contract. At Cleveland, the Cleveland airport is used, where the Stout Air Services occupy a modern hangar and station, erected by the Ford Motor Company for its airplane freight service. Transportation between the airport and the city of Cleveland, which is about seven miles distant, is furnished by taxicabs contracted for by the air line company. The rate of fare of \$18 one way between Detroit and Cleveland, or \$35 round trip, includes, in addition to the airplane transportation, transportation from the airports to the cities at each end. The company carries insurance covering accidents to its passengers.

The personnel of the Stout Air Services, in addition to the executive officers and the office force, consists of a traffic agent, four pilots, one chief mechanic and five mechanics. One active and one reserve pilot are located at each end of the line, the active pilot flying the plane over the Detroit-Cleveland line and the reserve pilot engaging in the furnishing of sightseeing tours and other special aerial service, which are an important part of the company's activities. The company does a large business in its 25-mile city sightseeing trip, for which a rate of \$5 is charged.

The planes of the Stout Air Services leave each terminal at 9:15 a.m. and 3:15 p.m., arriving at the opposite terminal at 10:55 a.m. and 4:55 p.m. Since the operation of the line was started on November 1, 1927, the loads carried in the 12 passenger ships have averaged approximately 50 per cent. Most of the advertising of the service is done by mail campaigns although time cards and folders describing the service are placed



Interior of the Cabin Looking Back

The Baggage Compartment and Toilet Are Reached Through the Door at the Rear

selected list of home companies at Detroit and Cleveland having branch offices at the other end of the line.

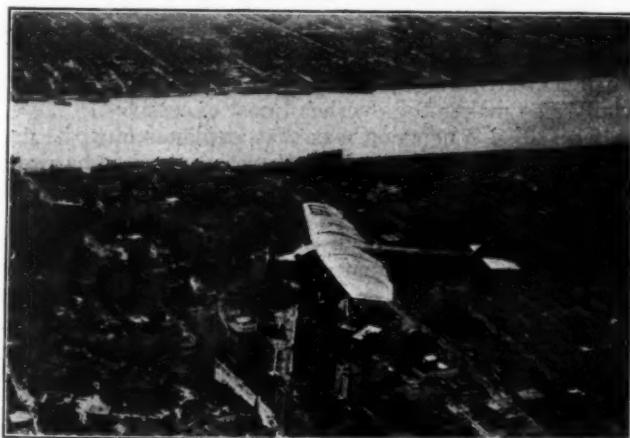
Among the many letters received by the Stout Air Services from its passengers is one from the district manager of a manufacturing company whose headquarters are at Detroit, which follows in part:

"I found that I could leave Detroit at 9:15 in the morning, accomplish nearly a day's work in Cleveland and then return to Detroit by 5 o'clock in the afternoon. I also learned that your passenger rate between Detroit and Cleveland is approximately 9½ cents per mile, the distance being figured on the automobile map, and inasmuch as it costs me approximately 10 cents per mile to operate my automobile, it costs no more to fly to Cleveland and back than to drive over and back. The total flying time round trip was 2½ hours, as compared with my driving time of 14 hours. This saving in time is worth a great deal of money, not taking into consideration the fact that the automobile trip is very fatiguing whereas the air trip is most restful."

#### The Detroit-Grand Rapids Operation

The one-year operation of the Detroit-Grand Rapids air line was not profitable, due to the heavy expense per mile on account of the experimental nature of the operation, but the experience gained from it was invaluable. Only one plane was operated on this route, no others being available at the time; during the year it flew 80,000 miles and carried 1,944 passengers. It completed 518 out of 536 scheduled trips, its operating efficiency being 96.6 per cent.

On account of having only one plane in service the company had to favor one city to the disadvantage of the other by giving morning departure and evening return at only one of them. In the beginning, the plane left Detroit at 9:30 a.m., arrived at Grand Rapids at 11:10 a.m., and left Grand Rapids at 4:40 p.m., and reached Detroit at 6:15 p.m. During the first month of operation, August, 1926, 132 passengers were carried. As an experiment the schedule was reversed and Grand Rapids was given the morning departure and evening return during the month of September, 1926. This schedule did not prove better, however, only 89 passengers being carried during the month, so that in October, 1926, the original schedule was reinstated. The



Sightseeing Tours Over Detroit Are Well Patronized

at the desks of hotel porters and floor clerks. Its mail campaigns are concentrated upon a mailing list comprising the membership of clubs and chambers of commerce of nearby cities. Such matter is also sent to a

best month which the company enjoyed from the stand-point of passenger traffic was May, 1927, when 250 passengers were carried.

An average flying speed of 88 miles per hour was made over the 142-mile route. Of the three trips which were started but not completed, one forced landing was due to a mechanical failure and two to weather conditions. Failure to start the remaining 15 scheduled trips was due also to weather conditions. During August, September and October, 1926, and April, May, June and July, 1927, the company had a perfect performance in trips started and completed. Its worst month was December, 1926 when only 85 per cent of the scheduled trips were completed.

#### Solicitation of Traffic

When the service on the Detroit-Grand Rapids line was started one man was employed to devote his entire time to the solicitation of traffic. At the outset, he spent 10 days in a Grand Rapids hotel recording the names of guests from Detroit during the previous month. It later proved, however, that very little business was obtained from this list. Information regarding conventions at both Detroit and Grand Rapids was secured and telephone solicitation of those planning to attend such conventions resulted in the securing of a number of loads of passengers. An effort was also made to interest Detroit furniture dealers in making their trips to the Grand Rapids furniture factories by air, but this was not particularly successful. Other employees, including the two pilots who were employed by the company at the time, were also assigned to the solicitation of traffic when their time permitted and some business was secured as a result. To enlist the aid of hotel porters for the service, they were taken for rides over the route free of charge and their active co-operation was thus secured. School teachers and principals were approached with little success.

An extensive campaign of direct-by-mail advertising was undertaken with fairly good effect. This consisted in general of small time cards and folders describing the planes and the trip. Such literature was sent to members of clubs and civic organizations.

A very large amount of newspaper publicity, amounting to hundreds of columns of free space, was obtained, even though there was no attempt at forcing the publication of stories. A small amount of newspaper advertising was run first in the Grand Rapids newspapers as a test before using the more expensive Detroit papers. Fourteen advertisements, measuring five inches deep and two columns wide, were run in the months of September and October, 1926. Through the co-operation of merchants in Detroit and Grand Rapids, small cuts reading "Save Time, Fly to Detroit" were inserted in display advertising of the stores, there being no expense to the Stout Air Services attached to this. Thirty-five such advertisements were published over a two-months period, while several other companies donated billboard and window display space without charge. For a time the company pasted stickers on the baggage of passengers making the air trip, but it was soon found that while this was liked by some it was objected to by others. Consequently, the baggage stickers were later given to the passengers to be used or not as they saw fit.

The initial rate for transportation between Detroit and Grand Rapids was fixed at \$25 one way. This was later reduced to \$18 in an effort to stimulate business, but without result. Still later the rate was reduced to \$16 and 10-ride books of tickets costing \$160 were issued. It was found that these books attracted traveling

salesmen in particular and they were able to sell 51.

The aerial sightseeing tours operated by the company were intended to accustom people to flying, to use the equipment more intensively, to make fuller use of the time of pilots and to secure additional revenue. These purposes were uniformly fulfilled with excellent results.

The Stout Air Services maintains a register of all its passengers showing their names and home addresses. It is thus able to determine where its business is coming from. In one month of operation of the Detroit-Grand Rapids line, it was found that 58 of the passengers lived somewhere in the state of Michigan while 93 passengers were from outside the state. These 93 passengers came from 28 different states, three Canadian provinces and four foreign countries.

In the solicitation of traffic it was found that there were four principal reasons for unwillingness to travel by air. Many were still afraid of air transportation. The second reason which was developed was that flying was too expensive. Many men held back on account of objections of their families, while others did so on account of their belief that their insurance policies would be void in case of accident while flying. This last impression is erroneous in view of the fact that practically all of the insurance companies have lifted the restriction covering aeronautics from their policies, making the insurance effective in the case of accident or loss of life while flying in the airplanes of a regularly operating air transport line. It was found that less than two per cent of the passengers carried between Detroit and Grand Rapids became air-sick and of this two per cent more women than men became sick. It was found that there is considerably less sickness in airplanes the cabins of which are large and undivided, lack of adequate ventilation being considered the chief cause of air-sickness.

The Stout Air Services, as a result of its year's operation of the Detroit-Grand Rapids line, reached several general conclusions regarding the possibilities for the transportation of passengers by airplane. In the first place, it found that a line 142 miles long is too short to sell on the basis of time saved, on account of the time required to transport passengers to and from the airports at each end. Most of its passengers on the Detroit-Grand Rapids line were "joy-riders" and there was little "repeat" business, although some of the passengers took the trip to save an hour or two.

The second conclusion was that one round trip daily is not sufficient to satisfy the demand, as it favors the city which has morning departure and evening arrival to the disadvantage of the other city. One round trip daily also makes the overhead cost excessive.

The third conclusion was that airplanes must be used as much as possible if their operations are to be profitable. In this connection it was found that the aerial tours and sightseeing trips give excellent results.

The fourth conclusion was that it is desirable to have sufficient equipment to take care of special flights to various cities not on the regular air line. This business has been found profitable by the Stout Air Services on its own account, and it has the additional advantage of helping to absorb the overhead incident to air line operation.

The last conclusion was that air lines will never compete successfully with railways until arrangements have been made for night flying. In the summer some late flying can be done but this is impossible at the present time in winter. The company believes that arrangements should be made as quickly as possible so that schedules can be maintained throughout the year.

# Automatic Interlockers Save Money

*Chicago, Milwaukee, St. Paul & Pacific reports annual saving from 20 plants equals 70 to 100 per cent on investment*

By L. B. Porter

Assistant Signal Engineer, Chicago, Milwaukee, St. Paul & Pacific, Milwaukee, Wis.

**S**INCE 1921, and particularly within the last three years, a number of installations of automatically-controlled signals have been made to govern train movements over railroad grade crossings. This new facility, termed "automatic interlocking," is now found at crossings not previously protected and at others in replacement of manually-controlled interlocking plants.

Probably a hundred or more automatic interlockings are now in operation in the United States. Inquiry develops that four western roads alone have 55 such installations in service, 24 of which have replaced manually operated plants. Twenty-two automatic interlockings are now in service on the Chicago, Milwaukee, St. Paul & Pacific; 5 more have been authorized or are under construction, and several additional installations are contemplated. Eight mechanical plants have been replaced by the new type, making it possible to relieve a number of levermen thereby effecting marked economies.

## Low Maintenance Costs and Attractive Savings

The cost of installing an automatic interlocking at a single-track crossing amounts to about \$6,000, which means low fixed charges for interest and depreciation. No levermen are required and consequently the cost of operation is reduced. The maintenance expense is also low and, due to the fewer number of units and the greater simplicity, the cost is considerably less than for the old type of plant. Furthermore no expense is incurred for tower heating and supplies. The total cost of maintenance and operation, plus the fixed charges, amounts to about \$1,400 per year. Assuming that this expense is divided equally between the two interested roads, each company's proportion amounts to \$700 per year, or less than \$2 per day.

The cost of stopping trains at a non-interlocked crossing varies widely with conditions, but figuring it at \$1 per stop, which is a conservative average for both passenger and freight trains, it would then be necessary to eliminate only two stops per day for an installation of this kind to carry itself.

A movement of eight trains per day would, after making allowance for a certain percentage of delays that would still occur, result in a net saving of about \$2,100 per year, which would be equal to a return of 70 per cent on the investment.

The savings from the replacement of a manually-operated plant with an automatic interlocking are also very attractive. Again taking the case of a single track crossing protected by a mechanical plant requiring the continuous service of levermen, the expense being equally divided between the two roads, each company's proportion of the maintenance, operation, and fixed charges, on a valuation of \$10,000 would amount to from \$3,500 to \$4,000 per year. Taking the smaller



*Eastbound Train at Delmar Plant*

figure, the difference in favor of the automatic interlocking would amount to \$2,800 per year, or equal to 90 per cent on the investment. This figure does not take into account the credits from the retirement of the mechanical plant, and does not make any allowance for increased costs, if any, of train operation due to the speed restrictions and the possibility of there being a few more delays under the automatic arrangement than with the mechanical plant.

On the basis of the foregoing figures, it would take a minimum of about 20 movements per day, or 10 on each road, for the old style plant to pay as compared with a minimum of 2 trains on each road for the automatic type of plant.

## Six Crossings on Single-Track Subdivision

There are six grade crossings on the C. M. St. P. & P. line between Aberdeen, S. D., and Mitchell; four with the Chicago & North Western and two with the Minneapolis & St. Louis. Although trains were required to stop for all of these crossings it was never believed that there was enough traffic to justify the heavy expense incident to the old type of manually controlled interlocking. During the last two years, however, automatic interlockings have been installed at three of the C. & N. W. crossings, and the fourth one is to be taken care of soon, while gates have been provided at the two M. & St. L. crossings, so that C. M. St. P. & P. trains can now move over these crossings without stopping.

This subdivision is 128.6 miles in length, and forms one of the connecting links between the Pacific Coast extension and the Chicago-Omaha line. Connections are also made with two other St. Paul lines extending east and west across Iowa and Minnesota. The line runs through open prairie country and is straight most of the way, there being one 33-mile tangent. While the line is fairly level, there are a number of grades, the maximum being 1 per cent. The traffic consists of two regular passenger and two regular freight trains, each way daily with occasional extra trains, especially during the grain moving season. The freight is of a varied character and consists principally of merchandise, lumber, coal, oil, grain, stock, machinery, and farm implements.

## New Protection Pays Good Returns

Since the new protection has been installed and the crossing stops eliminated, the average freight train running time over the division has been reduced 1 hr.

17 min. or an average saving of 14.6 per cent in train hours per trip. Likewise the average freight train speed has increased from 14.7 m.p.h. to 17.1 m.p.h., or 16 per cent. While passenger schedules have not yet been increased it is now much easier to make up lost time. Freight train loadings have increased about 170 tons per train with no change in the power. This increased train load is being handled in less time with about the same amount of fuel as formerly, which, of course, is a substantial saving. In passenger service the saving in fuel averages about 1,500 lb. per trip.

The protection at the three crossings represents an investment of about \$7,200 to the C. M. St. P. & P. The expense of maintenance and operation runs about \$1,400 per year, adding 10 per cent for interest and depreciation, brings the total to \$2,120 per annum. Figuring train stops on the basis of \$1 each, the net saving amounts to \$8,000 per year, which yields a return of over 100 per cent on the investment.

#### Installation on Heavy Traffic

##### Double-Track Division

An automatic interlocking has been installed at Delmar, Iowa, where the C. M. St. P. & P. double-track main line between Chicago and Omaha, Nebr., crosses one of its branches and a branch line of the C. & N.W. These two branches also cross each other at that point and there are a number of switches and other tracks in the vicinity of the crossing. This crossing previously has been unprotected and while interlocking had been considered it had never been installed on account of the heavy expense, while the complications created by the switches and station grounds would have been detrimental in some respects.

In the past the crossing stops had not been so burdensome because freight trains took water here and a number of passenger trains had branch line connections, but owing to the curtailment of branch line service, the use of heavier power, faster schedules, and other changes, it became more desirable to "run the crossing." For that reason this was one of the first places where automatic protection was installed.

Traffic on the main line is heavy while there are from 16 to 20 movements a day over the crossing on the two branch line tracks. The automatic interlocking has now been in service almost two years and the results obtained have been very satisfactory. Experience here has shown that an installation of this kind is practical on a heavy traffic line where speed is not of first importance.

Substantial savings have been effected as there is a 0.5 per cent grade on the main line approaching the crossing from the west, and the elimination of the stop has made it possible to handle considerable additional tonnage in eastbound trains. The fuel consumption has been reduced, train movements have been expedited, and operation on both main and branch lines have been benefited. Safety also has been promoted.

#### Advantages of Automatic Interlocking

The use of automatic interlocking provides an economical means of eliminating the statutory stops for non-interlocked grade crossings. This results in faster schedules and in substantial savings in train hours, fuel consumption and wear and tear to equipment.

The automatic type of plant is much more flexible than the old standard interlocking at points where there are switches in close proximity to the crossing. With the automatic plant these switches are arranged for hand operation, whereas in a mechanical plant they

would have to be connected up and operated from the tower. In many cases, an interlocked switch retards the setting out or picking up of cars and creates an awkward switching arrangement. It, of course, is an advantage to have certain switches interlocked and this can be taken care of in some cases by remote control for individual units, with automatic operation for the balance of the layout.

#### Manual Control

At points where crossings are located near stations, where operators are on duty all or a part of the time, it is often desirable to introduce an element of manual control into the automatic scheme. In this way it is possible to select train movements in accordance with their importance; to release the crossing when switching movements are made; and to avoid unnecessary delay when trains have station work to do. By the use of call-on signals, where there is a joint depot at the crossing, the transferring of passengers and baggage from connecting trains can be facilitated and a great deal of delay avoided. Under an arrangement of this kind, two trains can be moved up to the station at the same time, whereas with the old type of plant equipped with derails, this would be impossible without involving considerable complication.

The quickness of operation of the automatic plant appeals to enginemen. It takes very little time to clear a route and this is particularly noticeable when two trains are approaching the crossing simultaneously. As soon as the rear end of the train which has obtained the route has passed out of the home signal limits, the other train receives its signal without any delay for the throwing of levers as in a manually-operated plant. The elimination of the derail removes a hazard from the track as well as a piece of apparatus that is expensive to maintain. The installation of automatic interlocking at "stop" crossings promotes safety as it is safer to govern trains by positive signal indications, which give information as to actual track conditions than to depend on the observance of rules only, as is the case at the non-protected crossings.

#### New System Has Limitations

Automatic interlocking has limitations, and, of course, cannot be used where operators are required for train orders, blocking, or to handle switches. It is best adapted to simple crossing layouts, or to locations where the traffic on one road is light. It is not practical on heavy traffic lines where superior trains of one road would be subjected to frequent delays by inferior trains of the other road; or where an occasional delay, due to the necessity of flagging over the crossing in case the home signal fails to clear, can not be tolerated. Nor is this type of protection practical where a reduction of speed approaching the crossing is objectionable.

So far, owing to the absence of derails and manual attendance it usually has been considered necessary to impose a speed restriction where this type of interlocking is used. This varies from 10 to 25 miles per hour in the different states. In order to have the signal indication consisting with the speed restriction, fixed distant signals are usually provided. Some roads use a home signal that displays a slow-speed indication also. In the future, after more experience has been gained, it may be considered safe to raise the speed limit, in which case an operative distant signal would be more appropriate. If the development reaches that stage the value and utility of the new system of interlocking will be greatly increased.



Transcona Yard Is Operated Only Three Months a Year

## Moving the Canadian Grain Crop

*Efficient operating methods and expenditure of millions for facilities aid the Canadian Pacific*

### Part II

BETWEEN the opening of the 1927 grain season in August and the close of navigation on December 12, the Canadian Pacific handled 97,585 cars of grain. During the ten days ending with October 31, 16,220 cars of grain were handled, while 10,696 cars were handled during the week ending November 14, and 10,305 cars during the week ending September 30. The details of this remarkably heavy movement are given in Table 1. A comparison of the traffic during the grain season and at other times shows that, for September, October and November 1927, the total movement handled by the C. P. R. western lines averaged 72,710 cars per month, the highest month being November, when 81,249 cars were handled. During May, June and July, 1927, the movement averaged 38,172 cars per month. It will be seen that the traffic is practically doubled during the grain season.

As may be imagined, this volume of traffic, superim-

posed upon the normal traffic, cannot be handled efficiently without careful and effective planning in advance. This is particularly true in view of the fact that

Table 1. Cars of Grain Handled by the Canadian Pacific, from August, 1927, to the Close of Navigation

August	7	1,256
September	14	764
	21	2,216
	30	2,397
October	7	10,305
	14	6,494
	21	5,238
	31	9,163
November	7	16,220
	14	9,034
	21	10,696
	28	7,802
December	12	6,461
		9,539
		97,585

during the fall months the Canadian Pacific handles an unusually large lumber and coal traffic in addition to



West Fort Yard, Fort William, Where the Final Classification of Cars Is Made

the grain movement. The years of experience of the Canadian Pacific officers in this respect stand them in good stead in making necessary preparations.

Furthermore, the company has spent millions of dollars in providing facilities which will aid in the prompt dispatch of this heavy movement. The map shown as Fig. 1 indicates the large number of lines which have been constructed to serve the prairie provinces. The total mileage of the Canadian Pacific in these provinces west of Winnipeg is 6,836 miles, of which 949 miles is main line. This mileage represents nearly half of the total mileage of the Canadian Pacific proper, which is 15,055 miles. That most of it was built in the last two decades to serve the growing wheat area is indicated by the fact that in 1901 the total mileage of the Canadian Pacific was only 8,647 miles. The mileage in the prairie provinces is divided as follows: Manitoba, west of Winnipeg, 1,516 miles, with 204 miles of main line; Sas-

tions starts several months in advance of the time the grain actually begins to move. Cars which have been out of service for months are inspected, put in shape and allotted to the various divisions for the handling of the heavier traffic incident to the crop movement. Transcona yard is only in active operation during the grain season, and it is used during other periods of the year as a storage point for empty grain cars which are not in service. Last summer, for example, more than 7,000 empty cars were stored in Transcona yard awaiting the opening of the grain season, to be distributed to the various grain loading points.

The pre-season distribution of cars is made with Transcona yard as a center. There are, however, a number of other divisional distribution points in the grain loading territories. The cars are distributed from Transcona to these points and from there to the grain loading stations, based upon the pre-season esti-

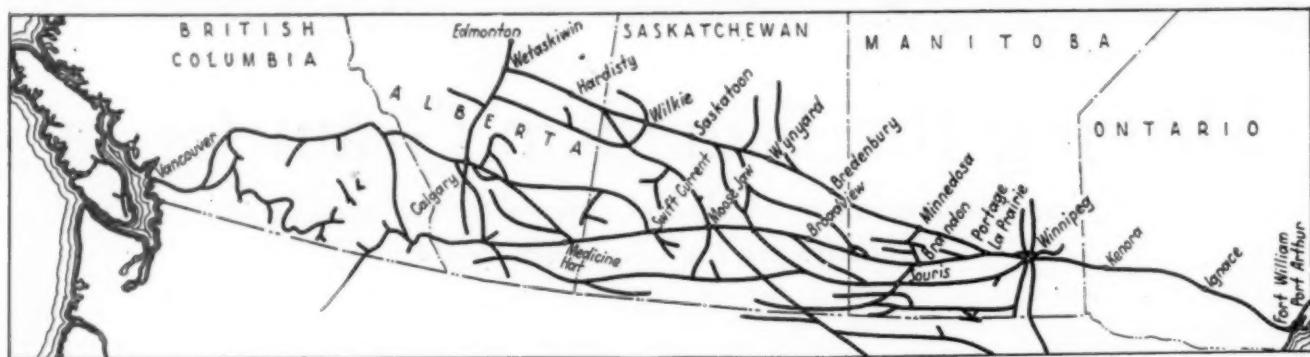


Fig. 1.—Map Showing the Canadian Pacific Lines Serving the Prairie Provinces

katchewan, 3,215 miles, 445 miles main line; Alberta, 2,105 miles, 300 miles main line. The grain grown along this network of branch lines in the prairie provinces must be moved to Winnipeg, and rushed through the "neck of the bottle," which in this instance is represented by the main line between Winnipeg and Fort William. It is imperative that the eastbound movement of grain to the lake be carried out before navigation closes so that the wheat can move east if market conditions are suitable.

The principal expenditures made in recent years to increase the railway's capacity have been the construction of the Transcona yard near Winnipeg, which acts as a reservoir during the time of the greatest pressure and supplements the large yard in Winnipeg proper; the double-tracking of the main line between Winnipeg and Fort William; the relaying of this line with 100 lb. rails; and the construction of a new hump yard, known as West Fort yard, at Fort William.

To handle the movement of westbound wheat to Vancouver, the divisions west of Calgary have been relaid with 100 lb. rail and signals are in the course of installation which, it has been estimated, will increase the capacity nearly 20 per cent. For the present, at least, the railway is able to haul grain into Vancouver faster than ships can be obtained to take it away.

#### The Car Distribution Problem

On December 31, 1926, the Canadian Pacific owned 64,519 box cars. The equipment available for handling of freight traffic on the western lines of this road alone represents an investment of nearly \$200,000,000 and if all of it were placed end to end, it would extend nearly 500 miles.

The distribution of cars to the grain shipping sta-

mates of the amount of grain to be produced at the various stations.

Last year, 41,000 cars suitable for grain loading were available on the Western Lines, which supply was further augmented by the movement of nearly 10,000 empty cars and 75 cabooses from the Eastern Lines. At the beginning of the season, in addition to the 7,000 cars stored at Transcona, 7,000 cars were stored at the western concentration points referred to, and 15,000 cars were on sidings at country stations awaiting loading.

It is the function of the mechanical department to see that these cars are in the best of condition so that as large a percentage of them as possible will continue serviceable throughout the grain season, without the necessity of repairs. To carry out this plan, all box cars requiring heavy repairs are run through the shops between the close of the heavy grain movement in December and its re-opening in August. Two of the three largest car shops on the system are situated in the grain territory. Weston shop at Winnipeg has a capacity of 800 heavy repair cars per month, while Ogden shop at Calgary can take care of 500 heavy repair cars per month. In addition, there are numerous car shops of varying sizes at the division terminals and concentration points, where light repairs are made. A car repair shop is also opened at Transcona yard in June of each year and all the cars in storage in the yard which require light repairs are taken care of there.

Many of the 15,000 cars awaiting loading at the country stations arrive there under load, sometimes months in advance of the grain season. In order that these cars may be in shape for the strenuous service, repair gangs with outfit cars are sent out from the division terminals to inspect them and make such repairs as may be necessary.

Of course, it is manifestly impossible to supply the grain territory with a sufficient number of cars to handle the entire season's movement, nor would it be efficient to do so. However, the plan of distribution is to supply the grain loading stations with a sufficient number of cars to handle the movement for a week or ten days. In the meantime, cars are arriving from the eastern lines and from other sources so that by the time the grain loading begins, a more or less constant stream of empties is flowing westward. As it happens, the districts where early grain production occurs, are relatively close to Winnipeg, with the result that as soon as these cars are loaded they are rushed through to the lake ports, unloaded at the elevators there, and returned promptly for another load of grain. As the movement gradually extends westward and the time necessary for a round trip of each car becomes longer, more and more cars are fed into the service with the result that car shortages are astonishingly few. It is estimated that the average service per car per season is three round trips between the fields and the head of the lakes.

The general plan of allotting cars under the supervision of the grain commission to shippers has been described in Part I. However, this does not by any means solve the problem for the railway. The cars must be available before they can be allotted and, if an equitable distribution is to be had among the various

ferrying cars from some nearby station where the need is not so acute. The entire process is calculated to avoid congestion, as far as possible, and to enable the farmers to market their grain freely and the elevator operators to get their grain to the head of the lakes before the season closes.

Another important feature which must be taken care of by the railway is the supplying of grain doors. In all, some 135,000 large grain doors and 100,000 small grain doors are required. Orders must be placed with the mills for these doors weeks in advance of the season and a large force of grain door inspectors and repairers is employed in salvaging the doors. Each door makes an average of three round trips before it becomes entirely unserviceable.

With a view to increasing the car utilization, the Canadian Pacific insists upon the shippers loading each car to its capacity. To facilitate this practice grain lines are marked on the inside of each car, showing the height to which it should be loaded to obtain maximum capacity. The C. P. R. insists upon loading to this line and the shippers, realizing that it is to their own best interests to do so, have co-operated in this respect. The results obtained have been excellent. Last fall for example, the total average loading of all 30-ton cars, marked capacity 66,000 lb., to Fort William was 64,856 lb., and to Vancouver 65,529 lb., 40-ton cars with a marked



The Yard at Ignace Is a Tonnage Breaking Point

stations, some idea of the expected movement must be had. To obtain this, a daily telegraphic report is sent from all grain loading stations to the district and division points and to the headquarters of the western lines at Winnipeg. This report shows the number of bushels of wheat and other grain marketed at each point by the farmers during the previous 24 hrs., the number of cars of wheat and other grains loaded at each point out of elevators or over loading platforms, the total number of bushels of grain in storage at the elevators, the number of cars loaded, the number in process of loading, the number of orders on the grain car order book and the number of box cars available.

These field reports enable the officers to keep in close touch with the situation at all times, particularly when they are taken in conjunction with the district and divisional reports which are also telegraphed daily. While the principal function of these reports is to aid in the distribution of empties, they also give the general officers a clear picture of the situation in the field, which enables them to predict with some degree of accuracy the prospective business that will be moving over all parts of the railway in the next few days. The reports promote the equitable distribution of cars, since a shortage at any station may be relieved promptly, by trans-



Kenora Yard Is the First Terminal East of Winnipeg

capacity of 92,000 lb., to Fort William 91,064 lb., and to Vancouver 91,805 lb., 60-ton cars with a marked capacity of 122,000 lb., to Fort William 121,091 lb., to Vancouver 121,925 lb.

#### Distribution of Locomotives

On December 31, 1926, the Canadian Pacific owned 2,255 locomotives, with an average tractive capacity of 33,014 lb. A large number of the locomotives assigned to the western lines are used only during the grain season. When the grain is not moving, the shops are kept busy putting every available locomotive in such shape that it will withstand the service required of it during the heavy movement, with only enginehouse attention. The Weston shops at Winnipeg can turn out 30 locomotives requiring classified repairs per month and the Ogden shop at Calgary can handle 25 such locomotives. In addition, the division shops take care of a large number of repairs.

To increase the available power supply, a number of engines are transferred from the eastern to the western lines each fall, 85 such engines having been transferred last year. Each of the engines, in coming from the east, brought a train of empties. This took care of the movement of the larger portion of the 10,000 cars which

were transferred from the east to the west. Before being sent west these engines are also put in first class condition, ready for the strenuous service in which they are about to engage. In return, at the end of the season, the mechanical department of the western lines goes over these engines thoroughly and sends them back in equally good condition. Under this arrangement the back shops are busy during that portion of the year when the grain is not moving, while during the grain season, there is relatively little back-shop activity, which enables the transfer of many of the men to enginehouses where, of course, the work materially increases during the rush.

Just before the movement starts, the surplus engines are distributed among the prairie divisions upon the basis of their needs, taking with them trains of empties for like distribution. This co-ordination of the distribution

occurred. The movements of work trains are also covered in detail. A report is also rendered covering cars set out between terminals, giving full details as to the location, and the reason. Weather conditions are, of course, important, in view of their effect particularly upon car loadings and also upon transportation and they are fully covered in this report.

Division operating reports are also rendered daily. These are printed separately for each division and give the complete operating line-up for the day, showing the position and character of loading of each train on each subdivision, together with a report of the cars awaiting transit at the various stations, which also shows when the cars will be moved out in trains.

All of these reports are thoroughly coded with key letters to facilitate their dispatch by telegraph. In addition to being received at the various division points,

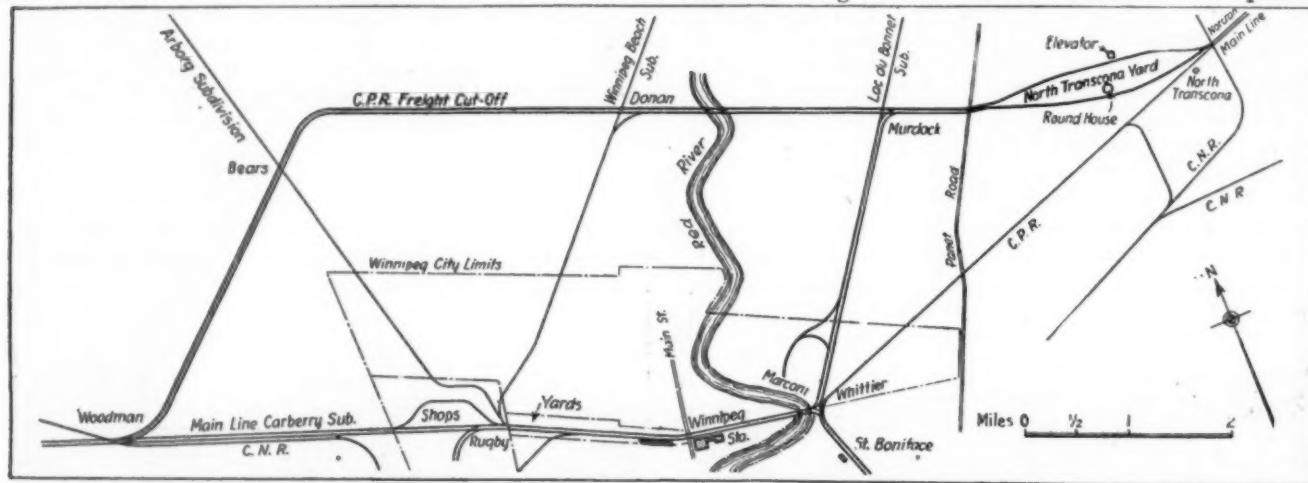


Fig. 2.—Diagram Showing the Canadian Pacific Lines in the Vicinity of Winnipeg, Including the Cut-Off Leading Through Transcona

of power and equipment has aided materially in both features of operation.

#### Operations on the Grain Divisions

While the operation of each of the divisions in the grain producing territory is separate, nevertheless, in order to handle the grain efficiently, the entire railway must be operated as a co-ordinated whole. To facilitate this, sufficient clerical force is added so that a system of reports, including advance consists, may be rendered to the division, district and general offices.

The station report covering the grain and car situations in the loading territory has already been described. In addition, there is a division transportation report covering each 24-hr. period, which gives in detail the number of cars moved, subdivided as between loads and empties, system and foreign, and further subdivided as to the class of equipment, whether box cars, automobile cars or stock cars, etc. This gives a complete consist of trains moving over the division. Space is provided for the number of loads and empties on hand at the various division terminals as of midnight, together with a general statement of the number of cars in transit on each subdivision at midnight. Further space is provided for a detailed statement of the power situation, giving information as to the number and class of each engine on the division, the service to which it is assigned, the total and the average mileage made by each class of engine. In an intensive operation of this character, engine failures assume even greater importance than usual and the transportation report gives complete particulars as to any engine failures which may have oc-

curring them a complete line-up as to the business they may expect from connecting divisions, these reports are also telegraphed to the office of the superintendent of transportation, where a consolidated report is made covering all the details and distributed to the general operating officers. Thus each general operating officer has on his desk every morning a complete summary of the previous day's situation and is able to control the movement as a whole in an efficient manner.

At the same time, the movement of passenger trains is watched even more carefully than during other seasons, as the on-time movement of passenger trains is regarded as being of equal importance when the grain is moving as when it is not.

#### Concentration Points Used

The grain loaded at the local stations is picked up by regular grain run crews, which are so assigned on each division as to cover the entire grain producing territory. It is then brought to the various division terminals to be made up into solid trains for the large concentration points. This concentration is effected at the following cities: Alberta: Calgary, Medicine Hat, Hardisty, Wetaskiwin; Saskatchewan: Wilkie, Saskatoon, Weyburn, Bredenbury, Swift Current, Moose Jaw, Broadview; Manitoba: Souris, Minnedosa, Brandon, Portage La Prairie.

At Calgary, the grain bound for Vancouver is made up in solid trains which do not break bulk until arrival at that port. On the eastbound grain, however, long experience has proved that, from the majority of the concentration centers, because of various tonnage break-

ing points enroute to Winnipeg, the handling of the grain in solid trains through to Transcona yard, where all grain trains break bulk, is not as economical as complying with the full tonnage requirements throughout the long haul and breaking bulk as the occasion requires. Of course, from the concentration points near Winnipeg, the trains are handled through, since there is no necessity of breaking bulk.

#### Methods of Securing Extra Men

The increased business requires the employment of from 3,000 to 4,000 extra men each year. This year, for example, 2,300 extra men were employed on the Manitoba district, 540 on the Saskatchewan district, 579 on the Alberta district and 160 on the British Columbia district (to handle the movement in Vancouver) or a total of 3,579 extra men.

As it happens, the time of the heaviest grain movement coincides with a rather slack season on the eastern lines. Thus, every year, large numbers of experienced train service men from the eastern lines come out to the prairies to take jobs during the grain rush. This force is composed largely of men who have not sufficient seniority to hold regular jobs all year on the eastern lines. It includes men experienced in each class of train and yard service and they return year after year. Of course, as the older men secure regular runs in the east, they cease coming for the grain season, but the

necessary to rely to a great extent on drifters and migratory labor.

Although no new dispatching offices are opened, it is necessary to increase the existing dispatching force materially for the period of heavy business, a complete extra set of dispatchers being employed in many offices. The C. P. R. has built up a force of extra dispatchers among its more experienced operators, who bid in the extra dispatching jobs each year, provided they are qualified to fill the positions. The vacancies in the telegraphing force left by these promotions are filled from the ranks of the assistant agents, most of whom are qualified telegraphers. It is then a relatively simple matter to secure local youths to fill the jobs as assistant agents, while the regular men are employed as telegraphers.

Engine-house staffs are increased to meet the demand by the re-engagement of men in the different localities, who follow certain seasonal occupations and are available for service during the fall movement. Besides, at this season, when the equipment has been put in condition and is in service, reductions at the main shops and repair points are necessary, and the men cut off are absorbed in the running repair service, to be returned to the main shops when repair programs are resumed at the beginning of the year, at which time the grain movement is practically over. Engine-house and common labor, in recent years, has been available locally.

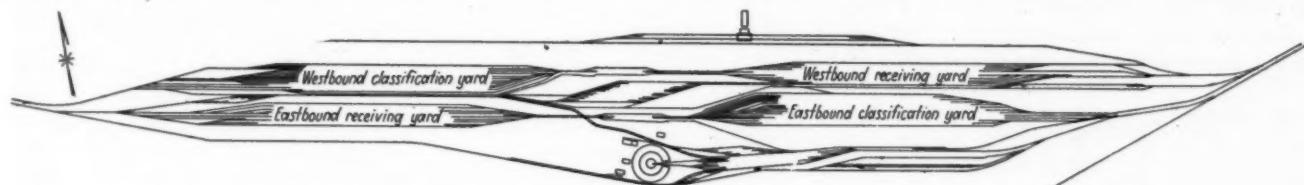


Fig. 3.—Operating Lay-Out of the Transcona Yard, Canadian Pacific

younger men take their places so that, while the force changes somewhat from year to year, the western lines are assured of an experienced temporary force. Moreover, they are men who are employed by the C. P. R. in one place or the other all year and hence they are far more responsible and steady than any drifters, however experienced, would be. Wholesale temporary promotions are also made in the all-year-round force on the western lines, firemen becoming enginemen, wipers becoming firemen, brakemen becoming conductors, etc., but all this is conducted strictly in accordance with the rules and the men are not promoted until they have passed a rigid examination to determine their fitness for the new job.

From these two sources, the C. P. R. obtains a reliable and trustworthy force for the responsible positions, which, while largely temporary in its structure, is composed of experienced men who are on the payroll of the company all year. The remainder of the necessary force is built up with young men living in the various localities on the line, who take over the minor positions in the yards and are so placed as to be always under the control of more experienced men. These youths are not "boomers" in any sense, finding other occupations in their home localities when their services are not required by the railway and returning to the service year after year, until they have attained sufficient seniority to obtain regular jobs. The building up of this type of force has taken years, being aided since the War by the increasing population of the prairie provinces, but, now that it has been established, the results are far more satisfactory than was formerly the case when it was

The same methods are followed in taking care of increased car forces at terminals, by transfers from the main shops and re-engaging employees who are able to find employment during summer months in the different localities or adjacent thereto, and are available in the fall when required. Some 600 extra men are employed annually in the mechanical department.

#### Transcona Yard

All grain cars intended for Winnipeg, Kenora, or for the elevators at the lake ports of Fort William and Port Arthur, move into Transcona yard from the west, from the main line, secondary main lines and branches entering Winnipeg from that direction. Here the trains are broken up, and the cars are inspected, classified and made up into trains for the last stage of the movement from the wheat fields to the lake ports.

The yard is situated six miles northeast of Winnipeg, on a freight cut-off, as shown in Fig. 2, which leaves the main line at Woodman, west of Winnipeg, and rejoins it again at Norcran, east of Winnipeg. Both the cut-off and the yard were built exclusively for the grain movement.

The property acquired provides space for a yard with a capacity of 13,000 cars. However, as the complete development was not necessary at once, the present lay-out provides space for 7,444 cars, which coupled with the capacity of the yard in Winnipeg proper, 5,255 cars, brings the total capacity of the Winnipeg terminals to 12,699 cars, with 333.7 miles of trackage, excluding shop tracks and industrial sidings.

Transcona is equipped with both eastbound and west-

bound humps, and the facilities include receiving, classification and departure yards for both directions, hold yards, caboose yards and other auxiliary yards necessary in a terminal of this size. The entry tracks from the west lead into the eastbound receiving yard, which has a capacity of 1,440 cars. From this yard, a double ladder converges into a double lead over the eastbound hump into the eastbound classification and departure yard. This yard converges into double ladders which lead to the exit tracks and so to the junction with the main line. Entry to the westbound receiving yard is over tracks to the north of the eastbound departure yard. The west bound group is identical in all respects with the eastbound group. A 55-stall engine-house is situated just east of the eastbound hump.

#### Operations at Transcona

As soon as the trains arrive, the contents of each car are sampled by the grain inspectors, as previously described. At the same time, railway car inspectors make their inspection. The cars are then carded, and made up into drags to be pushed over the hump. Full tonnage of 4,000 tons is insisted upon for each drag and three humping engines are used in a continuous chain operation that is rather unique. Only one shift is employed in the eastbound yard, beginning at 8 a.m. Two decapod engines start to work in the receiving yard an hour earlier, so that, by the time the third engine starts work at 8, the first two are engaged in pushing the first drag over the hump. The third engine prepares a second drag in the meanwhile and as soon as the drag being pushed over the hump is reduced sufficiently to permit one engine to handle it alone, the second engine returns to help the third engine push the second drag over the hump. In the meanwhile, the first engine has finished humping and returns to the receiving yard for a third drag, to be joined later by the second engine and so on. The three engines hump an average of two trains or 8,000 tons, per hour.

Before the cars are humped the yardmaster supplies the humpmaster with a switching list. The humpmaster supervises the cutting of the cars and acts as dispatcher for the car riders, of whom 25 per shift are usually employed. The last car of each cut has the number of cars in the following cut and the track to which it is destined chalked on the trailing plate for the information of the cutters and the riders.

The west bound hump, over which the empty cars are handled, is operated in three continuous shifts, with one humping engine and a trimmer on each shift. Fifteen riders are employed on each shift. Electric speeders are provided in both classification yards to bring the riders back to the hump.

Some 200 men are required in the operation of Transcona yard, consisting of 6 assistant yardmasters, 10 switchtenders, 20 checkers and clerks and 150 switchmen. Prior to 1920 this force was largely recruited from the men who drifted in from the United States. Beginning in that year, however, the terminal superintendent hired a force consisting of men living in Winnipeg, believing it better to teach loyal inexperienced men than to hire experienced but unreliable ones. This system has had good results. Last year fully 90 per cent of the previous year's force returned. Practically the only changes in this force in the past few years have occurred by reason of men acquiring sufficient seniority to bid in regular assignments and the hiring of others to fill their places.

The Canadian Pacific's only outlet from Winnipeg to the lake ports is the Kenora division, comprising the

line between Winnipeg and Fort William, 419 miles. For operating purposes the division consists of three subdivisions,—the Keewatin subdivision, between Winnipeg and Kenora, 125.7 miles; the Ignace subdivision, between Kenora and Ignace, 146.2 miles; and the Kaministiquia subdivision, between Ignace and Fort William, 147.2 miles.

The large business handled on this division during the grain season is shown in Table 2, which gives a detailed analysis of operations on the Keewatin subdivision. This covers the period between the opening of the Transcona yard on September 25, and the close of the season of lake navigation on December 12.

Table 2. Kenora Division Operations—Keewatin Subdivision

Period	Trains	Eastbound		Westbound	
		Cars	Av. No. Cars Per Train	Trains	Cars
9/6 to 9/30	91	4,783	53	77	3,567
10—7	135	7,971	59	118	7,090
10—14	88	5,923	67	93	7,114
10—21	99	5,833	59	93	5,549
10—31	235	13,800	59	198	11,678
11—7	166	9,596	58	160	10,222
11—14	144	8,354	58	145	8,405
11—21	152	8,562	56	145	7,657
11—20	202	11,759	58	207	11,915
12—7	113	6,156	55	125	6,313
12—14	128	5,550	44	111	5,447

The territory traversed by the Kenora division is not particularly suitable for railway construction, being a succession of rocky hills with thousands of lakes between them. However, since this division had to handle the major portion of the grain crop, it was double-tracked at great expense. The terrain offers little choice as to where a line may be constructed, but for the greater portion of the distance, the new line parallels the old one closely, though in some cases it was found necessary to build half a mile or more distant. The north line, by reason of grades and other physical characteristics, is most suitable for the eastbound loaded movement, while the south line favors the westbound movement. Accordingly, left-hand operation is used on this division, which is the only place in Canada where this is done. The line is equipped with modern coaling and watering facilities. Most important, the division is amply equipped with sidings.

The three subdivisions are operated as separate dispatching units. The chief dispatcher's office is at Kenora, and a trick dispatcher is assigned to each subdivision on each shift, while separate train sheets are maintained. All trains, both eastbound and westbound, are run as extras, and, so far as the loaded movement eastbound is concerned, these trains maintain their identity only over one subdivision. There are large flour mills at Kenora and a number of cars are destined to that point and do not move through. In addition, there is some fluctuation in the tonnage ratings over various portions of the division, as follows: Winnipeg to Rennie, 4,300 tons, Rennie to Kenora, 4,000 tons. Kenora to Ignace, 3,890 tons and Ignace to Fort William, 4,000 tons. Yards are situated at Kenora and Ignace and tonnage is reduced and added at those points as well as some tonnage changes made at Rennie. A typical operation is for a train to leave Winnipeg for Kenora with 4,000 or more tons. Tonnage is reduced at Rennie, if necessary. Upon the arrival of the train in Kenora yard, cars intended for the Kenora mills are cut out and the tonnage is reduced to 3,890 tons. Another train is started from the Kenora yard and upon arrival at the Ignace yard, a 4,000 ton train is made up for movement into Fort William. As soon as sufficient tonnage is accumulated at Kenora to run an additional train, an extra is run from Kenora to Ignace with 3,890

tons, where the additional tonnage is used in filling out trains from Ignace to Fort William to 4,000 tons. In view of the fact that loaded trains arrive at Kenora and Ignace on an average of 30-minute periods for three months, it may be imagined that sufficient tonnage is not long in accumulating. Despite the intensive operation, there is no congestion in Kenora and Ignace yards. A sufficient number of 3,890-ton trains is run out of Kenora to balance the number of 4,000-ton trains coming in and a similar procedure is followed at Ignace, except that, at that point, as previously described, tonnage is added instead of reduced. The tonnage ratings are adhered to closely, except during sub-zero weather late in the season, when the tonnage throughput is somewhat reduced.

Every effort is made to avoid running the freight trains in fleets, so as to avoid interference with the passenger trains, which on this division, as is the case farther west, are run on time, despite the heavy grain movement. It is interesting to observe in this connection that a passenger train ridden by a *Railway Age* representative from Winnipeg to Fort William in the height of the grain movement was not stopped once by protective signals during the entire run of 419 miles and maintained on-time movement throughout the run.

The movement of westbound empties over the division is handled with the same care as the loaded movement, since it is vitally important that the empties be returned to the wheat fields with all speed. Ordinarily 100 empties are handled per train, but if it is necessary to start a train of empties west at a time when it is likely to be overtaken by a passenger train, only 65 cars are handled so that, with the reduced tonnage, the train may get over the division at a sufficient speed to keep clear of the passenger train.

A check of the train sheets made at Kenora indicates an unusually precise and clear-cut operation on this division. The dispatchers have all had years of experience in handling this intensive business and the trains are moved over the division with a minimum of interference with each other or with passenger trains. An example of this operating precision is found in the run of 8 hr. 45 min. from Winnipeg to Fort William, made by a trainload of silk in the rush season. This is 3 hr. 5 min. faster than regular passenger train time, yet the train sheets covering that day show no undue delays to the regular movement of grain trains, which continued its steady progress as on other days.

Another indication of the efficiency is found in the statement of locomotive miles for the Kamistiquia subdivision, which shows that during the grain season, locomotives averaged 9,000 miles per month, or 300 miles per day, representing a daily round trip from Fort William to Ignace.

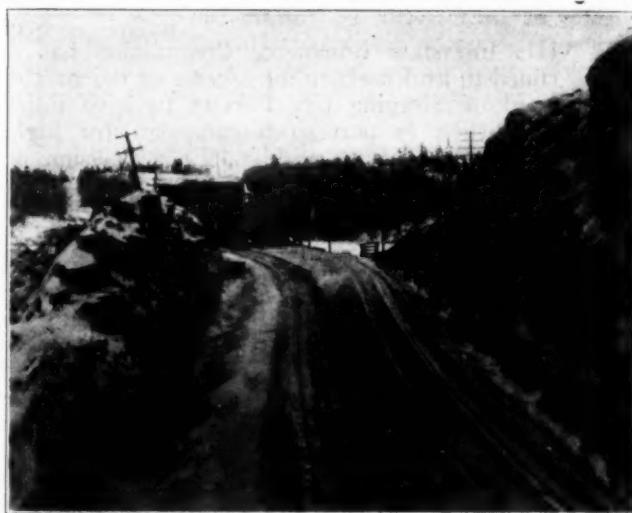
#### Operations at Fort William—Port Arthur

The final step in the grain handling plan, so far as the western lines of the Canadian Pacific are concerned, is the delivery of the cars to the elevators at Fort William and Port Arthur, for trans-shipment to the boats. These cities lie adjacent to one another on the north shore of Lake Superior, both having sheltered harbors which are ideal for the purpose. The elevators served by the Canadian Pacific at these ports have a total capacity of 53,630,000 bushels. Of these elevators, those on the C. P. tracks only have a capacity of 18,105,000 bushels, and those served jointly with the Canadian National 35,525,000 bushels.

Cars of grain arriving at this terminal are delivered in the receiving yard at West Fort. The facilities there consist of a modern hump yard, completed a few years

ago. At this yard the cars are classified for the elevators to which they are consigned. The yard is operated in two shifts, one from 8 a.m. to 4 p.m., the other from 7:30 p.m. to 3:30 a.m., the interval between the shifts being for the purpose of getting more cars in, so that the night shift may provide for the morning needs of the elevators. An unusual situation at this yard arises from the fact that one of the largest elevators served in Fort William is situated at the foot of the classification yard. The classification tracks used for the cars consigned to this elevator have been lengthened slightly, so that the cars may be dropped over the hump directly to the doors of the elevator.

The train yard at West Fort, as is the case at most other train yards in the grain handling territory, is piped



The Kenora Division Traverses Rugged Country

for air, so that the air may be put through the outgoing trains before the engine is coupled on. This aids operation materially in cold weather.

The normal switching power assignment is 12 locomotives. During the grain season, this is increased to 55 or 60 locomotive assignments, depending upon the amount of business to be handled. These engines take care of the gravity yard and of the large amount of flat switching, including switching cars to and from the elevators. The track lay-out in the Fort William terminal is such as to permit the utmost freedom in switching operations between West Fort yard and the elevators, and small yards are provided at various places throughout the terminal as a further aid.

The loaded cars are spotted just outside the elevators and are pulled over the loading chutes by electric car-hauling machines and out again by the same means. The empties are then collected by the switching crews and taken back to West Fort yard, where they are flat-switched into trains for the return movement. The average time consumed per car in the terminal from the time it arrives loaded and departs empty from West Fort is 12 hours.

The following table indicates the normal force at Fort William compared with the force during the grain season:

	Normal	Grain Season
Yard Clerks .....	31	51
Switchmen .....	46	250
Freight Office Clerks .....	48	77
Enginemen .....	30	80
Grain Door Repairers .....	11	65
Telegraphers .....	11	14

It will be noted that the operating force is increased by 360 men. Here, as at other terminals, preference is

given to men residing in the locality. In addition to the men obtained from the eastern lines, some of whom regularly stop at Fort William each year, a number of men are obtained each year who are employed during the summer months as industrial switchmen at a large steel industry nearby. Many of the local residents have attained sufficient seniority to graduate from car riders to qualified switchmen, and from the three sources referred to, a sufficient and responsible force is secured.

Part III describing the methods of operation on the Canadian National will appear in a following issue.

## I. C. C. Not Concerned With Porters' Tips

WASHINGTON, D. C.

THE Interstate Commerce Commission has declined to lend itself to the scheme of the Brotherhood of Sleeping Car Porters to have tipping legally abolished as part of a campaign for higher wages. On March 9 it made public a decision dismissing for want of jurisdiction the complaint filed by the brotherhood on September 7, 1927, alleging that practices of the Pullman Company in relation to the tipping question constituted a violation of the interstate commerce act and asking for an order to the company to cease and desist from permitting or encouraging tips. The Pullman Company filed a motion to dismiss for want of jurisdiction and the question was argued before the full commission.

The report, by Commissioner Brainerd, said the commission had been referred to no law prohibiting tips to porters, that a consideration of the complaint leads only to the conclusion that the real objectives sought are increased wages, and that the commission has no power to regulate wages.

### Dissenting Opinion

Commissioner Aitchison, in a dissenting opinion in which Commissioners Eastman and Lewis joined, said "the complaint seems to state facts which, if established, may constitute violations of sections 2 and 3 of the interstate commerce act and of the Elkins act, which we should investigate further than can be done by the mere inspection of the complaint and the argument thereon."

The main part of the report follows:

A motion to dismiss a complaint for the foregoing reasons is not specifically recognized in our rules of practice. Such motions when filed are generally overruled, but our practice permits amendment of the pleadings in all cases where we are satisfied that the complainant has within his knowledge facts which, if well pleaded, would constitute a cause of action within our jurisdiction and entitle the complainant to a hearing and decision at our hands. Counsel for both parties were permitted at the argument to amplify their written pleadings by stating certain alleged facts which they claimed could be proved by them if an opportunity for a hearing were afforded. For the purpose of this report we will treat the written pleadings as amended to contain such additional allegations of fact.

A motion to dismiss admits the truth of all facts well pleaded, and we therefore turn to consider what practices are assailed.

It is alleged in substance that the defendant began business in the early part of 1867; that it has since provided stated charges for the facilities furnished and services rendered by it in connection with the transportation of passengers in Pullman car service in interstate commerce; that such charges are, and for many years past have been, required by law to be published and filed with this commission and collected in strict accordance with the schedules providing such charges; that from the beginning the defendant has employed negro porters in and about its said business; that the said porters are obligated by the terms of their contracts of employment, among other things, to look after the safety and

comfort of the passengers travelling in the defendant's cars, and that as a result thereof said porters are brought into personal contact with such passengers, many of whom give to said porters various sums of money, commonly called tips; and that said tips are not a part of the defendant's published charges.

It is further stated that the defendant began its business after the emancipation of the negro race at a time when it was customary for negroes to volunteer their services to members of the white race and for the latter to reward them by a small gratuity or tip; that the wage scale for negro labor was much below that for white labor; that the employment of negroes as porters has forced the tipping custom upon defendant's patrons; and that the continual employment of such negro porters, with knowledge of said tipping custom, is an approval thereof by the defendant, notwithstanding the fact that said porters have been given written instructions by the defendant expressly prohibiting them from soliciting compensation from defendant's passengers.

It is further stated that the regular monthly wage paid by the defendant to the majority of its porters is \$72.50; that this wage is fixed after taking into consideration the amount which defendant estimates the porter will receive in tips, and that said sum of \$72.50 is not more than one-half to two-thirds of the wage necessary to enable said porters to continue in defendant's service; that defendant is said to authorize the porters to collect the balance of such necessary wage from its patrons in the form of tips; that the average amount received monthly in tips by each porter is approximately \$56; and that the aggregate yearly receipts by all porters is approximately \$7,000,000.

### Contended to Be in Violation of Interstate Commerce Act

The complainant concludes that the foregoing practices violate section 1 of the act because the tips plus the published fares result in charges that are unjust and unreasonable; that they violate section 2 because they result in the charging, collecting or receiving by defendant, directly, or indirectly, of greater or less compensation from some passengers than it does from other passengers for a like and contemporaneous service; that they violate section 3 because the amount and quality of service rendered passengers by the porters depend to a greater or less extent on the amount of tips received or expected to the undue preference or prejudice, respectively, of passengers accorded the greater and less amount and quality of service; and that they violate section 6 because the tips collected by complainant's members are the equivalent in law of charges demanded or received by the defendant as compensation for transportation which are not published in its lawfully established schedules of charges.

The complainant specifically prays:

That defendant be required to cease and desist from, directly or indirectly, informing and instructing applicants for positions as porters that they may expect increment to their wages from passengers, and from inducing or permitting porters in its service to receive gratuities from passengers, and from continuing to fix its wage rates for porters at an amount insufficient to enable them to remain in the service, and from all acts, policies or practices tending to produce discriminations among passengers in the service rendered them by its employees, and from inducing payment by passengers for services rendered in excess of the price printed on the tickets of passengers.

This amounts in substance to a request for an order directing the defendant to cease and desist from permitting the porters in its service to receive tips from its passengers.

We understand that it is not contended that the tips so given to and received by said porters become defendant's property or that they are turned over or otherwise accounted for to it. Pullman passengers are under no legal obligation to pay more than the scheduled charges.

We are referred to no law which prohibits tipping of Pullman porters. Certainly, in the acts which we administer there is no direct reference to tipping or any provision of law that may by any reasonable inference be said to refer thereto. Tipping in the Pullman service was practiced long before the Congress began to regulate interstate carriers, and it is reasonable to assume that had the Congress intended the practice of either giving or receiving tips to be unlawful it would have so declared in express terms. Moreover, a consideration of the complaint in all of its aspects leads only to the conclusion that the real objectives sought are increased wages for the porters and maids in the defendant's employ. We have no power to regulate wages, and consequently no authority to inquire into the justness of the complainant's demands, however meritorious they might prove to be.

The motion to dismiss will be sustained and the complaint dismissed for want of jurisdiction.

# Feedwater Heaters Reduce Pitting

*Service tests of locomotives on Milwaukee with heaters of open type show favorable results*

By C. H. Koyl

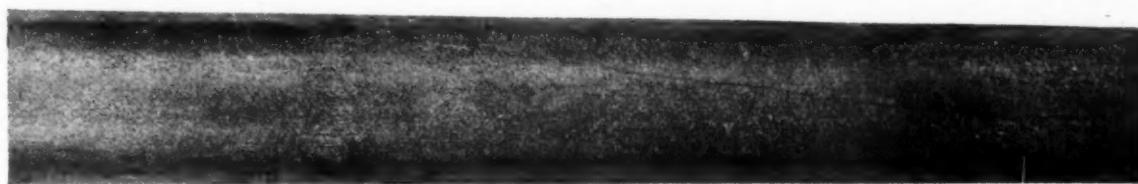
Engineer water service, Chicago, Milwaukee, St. Paul & Pacific

WE are making continuous progress toward the solution of the problem of the prevention of pitting in locomotive boilers. The strength of our present position is in the assured belief that at last we know something of the mechanism of pitting and are not groping in the dark. At least two methods are now known and while neither of them may be perfect for all waters and all working conditions, each of them is certainly effective for most waters and most conditions, and we have reason to expect that a few more years of intensive study will bring forth a general solution of the problem.

The following is an account of the successful outcome

iron and water are hottest there and chemical reactions take place more rapidly as the temperature increases; but it did seem strange that in alkaline water pitting should commence at the cooler end of the boiler and seldom reach farther back than mid length.

We all knew in those days that pitting in alkaline waters is the result of electrolytic action between hard spots and soft spots in the steel, or between pure metal and spots of impurities, and particularly between steel and such metals as copper. But here we had flues pitting at the front end where there was nothing but steel and not pitting at the back end where the steel flues were incased in copper ferrules as they passed through the



Flue Taken from Engine 2632 Which Was Provided With a Feedwater Heater

of 30 months of effort to prevent pitting by the method of excluding oxygen from feedwater, tested on a clean boiler running in alkaline water on a bad pitting district. The story begins with the effort, made some 12 years ago, to differentiate the conditions under which the complicated pitting of locomotive boilers takes place, by running each of several locomotives on one kind of water only (acid, neutral or alkaline) to observe the kind of pitting produced in each.

This necessitated the weekly examination of a few flues in each boiler so that the beginning and progress of pitting might be observed, as distinguished from the method of allowing a boiler to run until one or more flues were pitted to destruction, by which time it was too late to observe the characteristics and progress of the action.

## Develop Important Facts

This method of examination proved to be of the first

flue sheet. The actuating cause of pitting might be the difference of electric potential between spots differing slightly in chemical constitution or in physical condition, and the sodium salts in this alkaline water might make it an excellent electrolyte, but it was evident that the action was controlled by some condition which existed in the front half of the boiler and did not exist in the back half.

We noticed also that at Havre, Mont., there was rapid pitting in the front flue ends of the switch engines but scarcely any in the stationary boilers which used the same water but had an open feedwater heater. This gave us something to work on, and it was soon proved that the feedwater of the stationary boilers had lost some of its dissolved oxygen in the open heater while the feedwater of the switch engines, fed through injectors, had not.

This confirmed the conclusions of research chemists to the effect that the presence or absence of oxygen



Flue Taken From Engine 2614 Which Was Not Equipped With a Feedwater Heater

importance, for by it we soon learned that in acid waters (even the weak acid of decaying vegetation in a swamp) pitting commences in the back or firebox end of the boiler and gradually works forward, while in alkaline waters pitting commences at the front end of the boiler where the water enters and gradually works backward. It did not seem surprising that acid water should show its first effect in the back end of the boiler, because both

dissolved in the water determines the continuation or stopping of pitting.

## Pitting Action Explained

It is known that the atoms of iron which disappear from a flue, leaving a pit, are dissolved in the surrounding water and that an equal number of atoms of dissolved hydrogen are discharged on other parts of the

flue. But water can hold only a small amount of metallic iron in solution, and the water would soon become saturated and the pitting stop unless something in the water combined with the dissolved iron to make it insoluble and a precipitate, and thus make room in the water for the solution of more iron from the flue. Also, the atoms of hydrogen discharged on other parts of the flue gather there as a film of gas which obstructs the flow of the electrolytic current which is necessary to the solution of the iron at the pit, and unless this film is continuously removed the pitting will soon stop.

Oxygen dissolved in the water in the boiler combines rapidly both with the dissolved iron, to form the insoluble oxide of iron, and with the film of hydrogen to convert it into water; from which it follows that the presence or absence of oxygen dissolved in the water in the boiler determines the continuance or stopping of pitting. In the case of the boilers under observation, it was reasonable to suppose that by the time the feedwater, introduced at the front end, had reached half-way back on its way to the firebox the oxygen had all been forced into the steam-space by the high temperature of the water, and that this was the reason for the absence of pitting in the back half of the boiler. If this were all true it should be comparatively easy, by means of an open feedwater heater, to expel a good proportion of the dissolved oxygen from the feedwater of a locomotive before it reached the boiler and thus to prevent or at least reduce the pitting.

Fortunately there was a locomotive open feedwater heater on the market and tests made with it at the Altoona laboratory proved that under laboratory conditions it removed 90 per cent of the dissolved oxygen. It remained to try its efficiency in ordinary road service, and this has been done on the Chicago, Milwaukee, St. Paul & Pacific.

#### Install Open Feedwater Heater

Early in 1925 Engine 2632, equipped with new flues and an open feedwater heater, was put in way-freight service on a part of the Iowa and Dakota division where there is still some pitting, notwithstanding the use of treated water. But because of the kind of service it was sometimes necessary to take water through the injector while standing at stations, and therefore after one month's work of this kind the engine was moved to the treated-water portion of the Sioux City and Dakota division, our worst pitting district, and put in service on a through freight between Sioux City, Iowa, and Mitchell, S. D., a distance of 137 miles.

To learn the amount of damage done by the injector water of the "I & D" division, a few flues were examined on arrival at the "S. C. & D." division, but the only injury found was a slight roughness under the copper ferrules at the firebox end of the flues. For the sake of comparison another engine, No. 2614, a mate in all respects except that it had no feedwater heater, was put in companion service.

At intervals of about three months a few flues were removed from the feedwater-heater engine for examination (a different set of flues each time), but during 1925 the men reported "No signs of pitting." On January 16, 1926, after nine months' continuous service, we found a few small spots where the polish had disappeared from the metal but the depressions were too slight to measure or to be felt by the fingers, and we could find no increase in the roughness under the copper ferrules.

On the same date an examination of the companion engine, No. 2614, showed the flue ends under the copper ferrules so badly corroded that the boiler foreman ordered all the flues replaced, and of these flues, 25

were so badly pitted on the front half that they were scrapped while the remaining 163 were used again. The photographs illustrate the condition of the flues of Engine 2632 without marks, and the appearance of one of the badly pitted flues of Engine 2614.

#### Saving in Coal and Water Also

Because this test was being made for pitting and many tests of this feedwater heater had been made for saving coal and water, we made no official test for these but the engine crew reports a saving of at least 10 per cent in coal and 14 per cent in water. The average cost of pitting on this district before water was treated was \$2,000 per engine per year, and since the water has been treated it is approximately \$1,000 per engine per year. The estimated coal saving on this small engine of 36,600 lb. tractive effort is 400 tons per year, so that by preventing all pitting the total saving on this engine is not less than \$2,000 per year.

Since April, 1925, the engine has been in continuous service with no reports of pitting up to September, 1927; but since that time the engine has been run by a crew which has reported much foaming with the heater and much use of the injector, so that the December examination of two flues revealed 11 small pits. However, this crew has now learned how to run an engine with a feedwater heater without foaming and we hope to find no increase in pitting during the balance of the four-year test. To extend the test to other waters we have equipped four more engines with these heaters and are running each one on a different division.

It is true that there are some 3,000 of these heaters in use on other roads and that only a few of the owners have reported a diminution of pitting. At first the other roads explained that they had been looking only for a saving of coal and water and that the pitting might have diminished without being reported. During the past two years the successful test on the Chicago, Milwaukee, St. Paul & Pacific has become widely known but there has been no public corroboration from the owners of these other locomotives provided with open feedwater heaters. However, unofficial reports indicate a noticeable reduction in pitting now that it is being looked for, but there has been no such general agreement as one would expect.

Perhaps the fact that the original intent of the heater was to save coal and water by utilizing the otherwise wasted heat of the exhaust steam, and that therefore there has been no means of heating the water while the engine is standing at stations or on sidings, may account for some of the pitting which is still found. Perhaps the fact that all engines with any kind of feedwater heater tend to foam until the men have learned to use them properly, and that therefore there is a great temptation to use the injector a considerable part of the time on the road, may account for more of the pitting. Perhaps cold water has been pumped through the heater while drifting and there was little steam to heat it. Perhaps in hill climbing the injector has been used to help out the water supply. Perhaps the packing in the hot-water high-pressure pump has been allowed to deteriorate so that this pump does not take out hot water as fast as its companion pump delivers cold water to the heater and therefore the heater has been filled with water so that no gases could escape. This may account for some of the pitting on these other roads.

The fact remains that Engine 2632 has been run without pitting for 2½ years on a treated-water district where all other engines pit badly, and that not only is this method of pitting prevention successful in this water but it also saves at least \$1,000 worth of coal on this small engine yearly.



Sixty-five Typists Organized in Valuation Department to Prepare Statements to be Presented to Interstate Commerce Commission.

## Centralized Supervision of Office Equipment Economical

*A greater use of machines and a decrease in the amount of repairs result from this practice*

By Warren L. Hanna

Assistant Supervisor Office Equipment and Methods, Southern Pacific Company

**A** DEPARTMENT of office equipment established by the Southern Pacific to supervise all office machines and machine methods on its Pacific lines has resulted in economy through the elimination of purchases of an unnecessary nature, the prevention of purchases of expensive machines where cheaper ones will serve as well and through the selection of the machines best suited to each type of work. This road has been a pioneer in specialization in the field of railroad office equipment and methods. Influencing reasons were the increasing complexity of railway office work, coupled with a realization of the possibilities for the improvement of office methods.

This office supervises all office machines and machine methods on the company's Pacific lines and handles every transaction relating to an office appliance. To a considerable extent, this has been pioneer work, requiring the blazing of new trails in many directions. The trail blazing is not yet completed but the institution of such a centralized authority was the beginning of specialization.

To permit an appreciation of the scope of the Southern Pacific company's office machine work, it should be explained that the latest statistics from the Pacific lines show the ownership of 5462 appliances. Of this number, more than 3,000 are typewriters, over 1,000 are adding and calculating machines, and approximately 700 are dictating machines. The balance are a miscellany, comprising over 50 types of machines useful and necessary in various phases of railroad office work. This

equipment represents an estimated original cost of approximately \$1,000,000.

A primary object of the department of office equipment and methods is to provide expert oversight over all purchases of office equipment, particularly with respect to the necessity for acquisition, to its standardization and to its suitability for use. This supervision results in efficiency because it permits the intelligent determination of the needs of the system as a whole, because it furnishes a means of placing annual equipment requirements on a budget basis, and because it makes possible the standardization of important types of office equipment. It results in economy because it does away with planless purchasing through the elimination of purchases of an unnecessary nature, through the prevention of purchase of an expensive machine where a cheaper one will serve as well, and through permitting the selection of the machine best suited to each type of work.

It is obvious that a decision must be rendered by some one regarding the necessity for the acquisition of office equipment. Since it must be the business of some one to say yes or no to every request for an office machine, it is tragic, from the standpoint of efficiency, when that decision must be made without the benefit of independent investigation. Nevertheless many railroads are rendering decisions on this basis. A department specializing in office equipment and alert to all the circumstances of each particular case is able to recommend wisely and impartially. Without such independent ad-

vice the executive can do little more than approve each request as long as finances permit.

Careful consideration of the problem of acquisition of office machines reveals the existence of a number of desiderata. The matter of standardization, for example, is not a disturbing problem in the ordinary industrial organization. With a railroad, having offices stretched over several thousand miles of territory, it could be a difficult problem if not handled by a central



Electric Billing Typewriters Facilitate Work

agency thoroughly familiar with the needs of the scattered territory. Specifications of standard types of machines for certain kinds of work are a valuable feature of a standardization policy.

Passing on the question of the suitability of a machine for use implies a familiarity with the various appliances of a given type, as well as some acquaintance with the particular work to be done. Many railroads owe most of their progress in the office machine field to the explorative efforts of office appliance salesmen who discover a need and offer to sell the machine which fills that need. Sometimes the discovering salesman happens to be the purveyor of the best machine on the market. Often he is not, and it is almost impossible for the office man, who does not have the time to specialize in such matters, to learn the facts. Indeed it is often a matter of difficulty for a department devoting full time to this work to arrive at decisions in some cases.

#### Distribution and Use Supervised

A second object of the department is to exercise centralized supervision over the distribution, care and, to a certain extent, the methods of use of all office machines located on the Pacific lines. This supervision results in efficiency through making possible the placement of available equipment to the best advantage, through insuring proper care and use of machines by instruction and regulation, and through record-keeping, to useful purpose, on all machines. It results in economy since it brings about extended life of equipment as well as decreased repairs and other upkeep. Economy is also inevitable whenever it is possible to substitute a machine for a man or to make it unnecessary to hire an additional man by supplying a machine instead.

Supervision over the distribution of all office machines presently owned by the company, is an important part of this department's work. By the term "distribution" is meant the placement of machines on hand to the best advantage. For instance, an office in Tucson may advise that it desires to release a standard correspondence typewriter, but needs instead a machine with an "18" carriage. Possibly within a short time there may be received from Klamath Falls a request for a

standard correspondence machine to replace a wide carriage machine. The department, being informed of the requirements of every office, acts as a clearing house for the arranging of such exchanges, whenever possible.

Hundreds of loans of typewriters, adding machines and calculators are arranged annually by this department. At many points on the line where equipment on hand will take care of normal requirements, there are peak periods when business increases heavily. Notable instances of such peak business are the fruit and vegetable movements in the Imperial and San Joaquin valleys. Considering the needs of the system as a whole permits the handling of those needs to the best advantage and with at least a hundred fewer typewriters.

The care accorded all office machines belonging to the company is a source of constant interest to this department. The proper treatment of the equipment, as in the case of all machinery, serves to increase its serviceability and to lengthen its life. Regulations governing the care of office machines have been formulated and reports of their observance are received regularly. Circulars are issued covering the care of all office equipment in common use. As a result of this campaign for the careful treatment of equipment, the average life of machines owned by the Southern Pacific has been lengthened approximately three years. The company employs its own mechanics, thus insuring that the repairs and the servicing of machines will be prompt, satisfactory and reasonable in cost.

A particular feature of the work is supervision over the use of the various office machines on the system. It is desirable that full utility be derived from the available equipment. Whenever it appears that this is not being obtained, suggestions for the improvement or the correction of the matter are offered. The proper use of dictating machines is particularly essential as they are



Addressing Machines Show Information on Time Cards, Payrolls and Pay Checks

frequently considered a failure when a little more attention to their use would have turned them into a decided success. Instructions indicating the proper procedure are therefore issued. The use of typewriters and adding and calculating machines is centralized into bureaus wherever such a step appears to serve the interests of efficiency.

The task of keeping the record of many office machines is rather an interesting one. Card records are maintained, one for every machine, which contain the life history of that machine. All items concerning the make, type, or the model, the cost, the date of acquisition and the location of each machine are noted thereon. A chronological detail of the transaction involved in acquiring every machine is posted in a bound record. Once a year each office on the Pacific lines to which

any machines are assigned is asked to make out an inventory of those in its possession. A check of returns enables the department to keep track of every piece of equipment owned. These records have proven of great value in recovering missing machines and in apprehending those responsible for their removal. Other sources of information available to the department also make difficult the theft or disappearance of company machines.

For the purpose of determining just when an office machine has reached a point where it is unfit for further use, a formality known as "condemnation" is employed. A company mechanic makes a thorough examination of the machine in question to make certain that it will not be feasible to repair it for further use. This expert and impartial inspection assures the company of the maximum life from its mechanical office equipment. Otherwise the machine may be replaced while still useful or kept in service until a decrease in the operator's output becomes costly.

The above account of departmental activities indicates the possibilities of this work. The value, in dollars and cents, of such supervision is difficult to estimate, owing to the lack of comparable data. If it were possible to calculate the annual saving effected through its multifarious activities it would, without question amount to many thousands of dollars.

#### Relation of Machines to Labor Costs

Perhaps the biggest factor in its possibilities for economy, which is involved in the office machine situation is the relation of machines to labor costs. In the case of the Southern Pacific, for instance, with over 5,000 office machines, more than 5,000 clerical employees are oper-



Fanfold Typewriters Type Leases, Deeds and Contracts in Quintuplicate

ating those machines part or full time. The salaries of those employees may be estimated at \$6,000,000 annually, or about half a million dollars every month. Every two months, on this basis, there is expended for the salaries of those who handle office machines an amount equal to the entire original cost of all the machines owned by the company. These simple figures serve to bring out the enormous disparity between machine and labor costs. Since the average life of an office machine is seven years or more, it may easily be calculated that it would pay to double the mechanical equipment, if even as small an amount as 5 per cent of the labor cost could be saved. This is regarding the situation purely

from the standpoint of economy, irrespective of the well known mechanical advantages of speed, accuracy, thoroughness, neatness and legibility.

Actually and potentially, therefore, the problems of when to buy more office appliances and how to make better use of those already on hand involve considerable sums of money, not money for equipment costs, which are comparatively modest in amount, but expenditures for the salaries of labor chiefly engaged in the operation of that equipment. To spend for office appliances so as to effect the greatest pay-roll saving is an objective to be kept constantly in view. An outstanding example of this sort of expenditure is the recent re-organization by a western road of its division accounting system in such a way that more than \$80,000 was invested in new office machines, a huge sum for an installation of this kind. Annual economies resulting from the change are now mounting above \$40,000 and are expected to reach the \$50,000 mark. The cost of equipment is thus being offset by the saving in labor every two years or often.

Every investment of importance is entitled to proper administration. Once acquired, an investment in office equipment cannot be successfully forgotten. If worth obtaining in the first place, it is surely worth maintaining and utilizing in such a manner as to extract its maximum productivity. Just as every railroad employs to good purpose a motive power department for the administration of its traffic equipment problems, so, similarly, could every large road maintain to advantage a department for the supervision and study of its office equipment problems. The likenesses and logic involved in this analogy are amazing.

#### Next Decade to be of Intensive Development

It may be prophesied, without fear of contradiction, that the next decade will see intensive development in office methods, hinging in most cases on mechanical improvements of office devices. Developments in this line are coming so fast that even the office appliance specialist is busy keeping abreast of affairs. A marvelous increase in railway efficiency has taken place in the last 20 years, as a result of physical betterments and improved mechanical methods. It is only natural that the pendulum should now tend to swing in the direction of the office.

As a straw to show which way the wind of office affairs is blowing, it may be mentioned that the five largest industrial concerns in the United States have established departments which function as laboratories for experimenting with better methods of handling office work. They realize that specialization is essential to progress in this field. No doubt they believe that if some good can come from having office shortcomings pointed out by the office machine salesman, it is far better to have a specialist in their own organization who is constantly working toward adapting the office appliance to their own particular needs and adapting their work to the office appliance.

Our larger railroads, in the midst of constant strife with major problems of operation, have found it easy to follow the line of least resistance with respect to less pressing questions. The office machine question has seldom been considered in its entirety by the railroads. It is usual to find the work in connection with office machines scattered through several departments, no one of which knows what the other is doing. In some cases the selection of machines is left to the tender mercies of the purchasing department, which struggles valiantly with a task involving many factors beyond its knowledge.

or control. Occasionally some individual is designated to pass on requisitions for office machines along with so many other duties that he is prevented from becoming particularly proficient in the office machine field. Sometimes a hit-or-miss method of approving requisitions for office appliances is employed, everything being approved as long as the appropriation holds out. Other roads attempt a periodic housecleaning, depending on this means for the installation of modernized machine methods.

All these irregular efforts are significant. Although they do not, in every case, represent an appreciation of the true value of the office appliance, they frequently indicate a groping toward the light of efficiency and a struggle for a better means of handling the office machine question. Until a clear-cut conception of the nature of the office machine problem is obtained, the ultimate solution, logical though it be, is likely not to be recognized.

The idea of centralized supervision is, perhaps, too radically progressive to meet with instant favor or immediate adoption. After the subsidence of the first instinctive remonstrance, however, the possibilities of the new plan are certain to recommend it to the approval of all concerned. The larger railroads, in particular, will find it well adapted to their purposes with possibly such minor amendments as may be required.

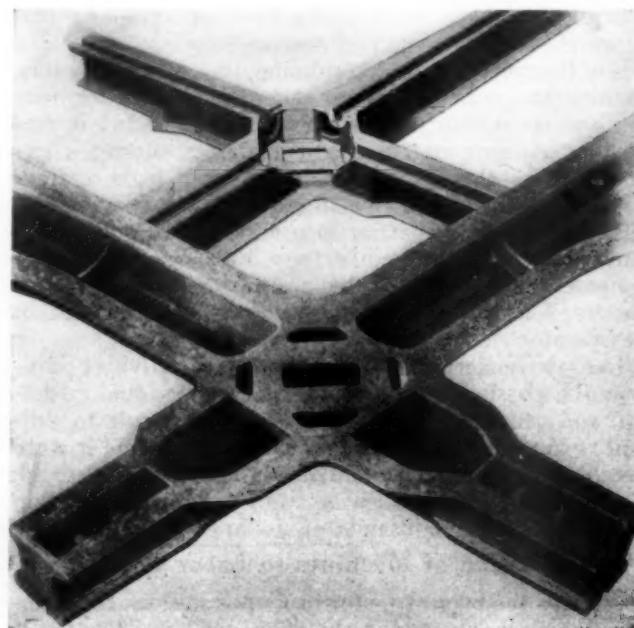
Those not familiar with the benefits to be received from supervision of office equipment and methods may inquire as to what size an organization should attain before special supervision may become desirable for efficiency and economy. This is a variable condition, but it may be said in a general way that such will be the case when the benefits to be derived are more than sufficient to offset the cost of the supervision. Roughly, if a company has more than \$250,000 invested in its office machines, or if the salaries of those using machines amount to as much as \$1,000,000 per annum, centralized supervision should be valuable if established as a separate department. Without question there is more than enough work on any Class "I" railroad along the lines mentioned earlier in this article, to fully occupy the time of at least one person in a supervisory capacity. This is on the assumption, of course, that such a person is handling all phases of the office machine situation.

## A Scientifically Designed Manganese Crossing

**R**ECONIZING that the ever increasing wheel loads of modern train operation should be met with scientifically designed trackwork, William Wharton, Jr. & Co., Inc., Easton, Pa., has for the last four years engaged in a scientific investigation and study of manganese crossing design. As a result of this work, this company is now manufacturing a new type of manganese crossing in accordance with the findings of its investigation, suited to withstand the working stresses to which it will be subjected in any class of service. The investigation was made from two major viewpoints. First, to create a design which would afford minimum unit stresses in the structure when in service and, second, to determine just what sections could be cast and heat treated with the assurance that the metal would be sound throughout.

The new type of crossing incorporates a number of new features of design. In the first place, there is

uniformity in the metal sections under the tread and groove surfaces, an advantageous feature which became evident early in the investigation. There are no supporting members joining the under side of the tread and groove metal, thereby eliminating the danger of shrinkage, cavities and heat treatment defects in the metal



Showing the New Features of the Crossing

surrounding the intersection of the gage lines, the point where most crossings fail. A bottom gird or floor beneath the intersection of the flangeways forms a hollow box-like structure at this point, which is said to give the crossing extreme resiliency and strength, and at the same time avoid excess weight.

### Cross Members

Cross members in the arm sections of the crossing form a strong tie to prevent the side walls from spreading, but these members do not come in contact with the under side of the tread or groove surfaces, thereby avoiding the possibility of interior defects which so frequently cause cupping in the tread surface. The side walls of the crossing are tapered in thickness, being thicker at the top where they join the under side of the tread and guard sections.

This feature was incorporated to decrease the unit stresses in the groove section and to permit a gradual transition of metal sections, from the thick tread to the thin outer flange of the base.

In arriving at the new features of this crossing, Beggs method of analysis of stresses was followed, using a Beggs deformeter, and studying the resulting stress reactions under the microscope. The findings in these studies were checked by Prof. Mortimer F. Sayer of Union College, employing its photo-elastic model method of polarized light analysis, and the results produced were found to be remarkably close.

A HAND CAR MUST NOT BE RUN without permission, on penalty of imprisonment or fine; this is the substance of an old railroad law in Wisconsin (St. 1925, Sec. 343-43). In the case of Ramey vs. Oconto (217 N. W. 323) The Supreme Court of the State holds that this applies to railroad velocipedes and motor cars. No recovery can be had in the case of a person killed by a train while thus riding on such a car.

# Diesel Engines for Railroad Traction\*

*Discussion of adaptability, weight and cost per horsepower, and types of transmissions*

By D. L. Bacon

Supervisor of Automotive Equipment, New York, New Haven & Hartford

**F**IVE years ago the Diesel locomotive was practically unknown on American railroads. Today there are more than thirty units operating in this country and fourteen Diesel rail cars in Canada. Other units of greater power are now undergoing test and a number of reputable engine builders here and abroad are ready to construct and guarantee performance on engines of almost any size and power. Because of this rapid development a great deal of interest is now being shown in the Diesel question, and many railroad officers are now studying the possible fields for applying this type of power. The entire subject is admittedly a new one, involving as it does, unknown engineering, operating, and economic factors, which at first must be estimated and predicted as accurately as possible, but which in the long run can only be determined by actual application.

Statistics for 1927 show that over one-half of the world's shipping built in that year was powered with Diesel engines: 1,200,000 Diesel horsepower in contrast to slightly over one-half million horsepower of reciprocating steam and less than one-half million horsepower in steam turbines. Diesel engines are now being built in sizes up to 15,000 hp. for stationary and power plant applications but these do not directly concern the railroad field.

The question which naturally comes to the mind of a railroad man is this: "Why has the Diesel engine been so widely used in marine applications and yet failed until the last two or three years to find its way into the railroad field?" The answer is easily stated. The marine engine does not have to start under any appreciable load, whereas the locomotive's hardest task is to start and accelerate its train. The steam engine can exert indefinitely a very high tractive force when at a standstill and can continue to do so at increasing speeds, accelerating the train up to the point where the boiler becomes unable to supply steam as rapidly as the cylinders are using it up.

From there on the power is limited only by the boiler capacity. The Diesel engine, on the contrary, requires a preliminary cranking or turning over by some outside agency preparatory to generating its own power, just as is the case with an automobile engine. And, still in common with the automobile, a connection is needed between the crankshaft and the driving wheels which can be made suitable for starting or hard pulling on a hill and also for high speed operation.

Direct connection between a constant torque engine and the driving wheels gives essentially a constant tractive force of the locomotive at all speeds, hence maximum power can be obtained only at maximum running speed. At half speed, only half power is available, at quarter speed quarter power, etc., so that a large part of the time, and particularly when we are most in need of power, we are unable to get more than a fraction of what we paid for in buying the engine.

Probably the oldest continuous use of Diesels in railroad service is that of the Swedish State Railways, where

Diesel engine rail cars have been in constant service since 1913. These cars are powered with an air injection Diesel having an electric generator applied to the end of the crankshaft. Current is led from the generator to the traction motors, mounted on the individual axles in the same manner as is customary on trolley cars. Twenty or more of these cars are now in service and this operation for a period of 15 years has shown great reliability and saving, both in fuel and maintenance, and demonstrated the entire feasibility of Diesel application to rail power if carefully engineered and organized. These cars are, in many respects, similar to the gasoline rail cars with which you are all familiar and which are now in general use for handling light passenger traffic on the Boston & Maine, the N. Y., N. H. & H. and other progressive roads throughout the country.

## Comparison of Different Types of Transmissions

The great advantage of the electric transmission lies in the fact that through its use, any inflexibility of the Diesel engine is ironed out until the smoothness of power at the rail and the ease of starting and maneuvering is superior to that of any steam locomotive. The engine can be operated at its full rated power at any train speed while the electrical equipment automatically or with a minimum of attention from the operator, transmits this power (minus some 20 to 30 per cent electrical losses) and exerts it on the rail in tractive force appropriate to the train speed.

In common with other electrical machinery, the electric transmission is fool proof to a high degree and if treated with care has a long life. These are of course important factors from the railroad standpoint, as they protect the equipment in the hands of unskilled operators, promote reliability and serviceability and tend to minimize repair costs.

Because of these conditions the majority of Diesels in railroad service are equipped with electric drive in spite of its high first cost and weight. There has been constant effort, however, to devise other means of harnessing Diesel power and adapting it to traction purposes. Some of these have been more ingenious than practical while others show considerable promise.

A number of industrial locomotives built a few years ago in Austria and Germany had various forms of hydraulic drives in which an oil pump attached to the engine circulated fluid through oil motors on the axle or jack shaft. These were however, all of low power and it is generally believed that transmissions of this type are not suited to powers in excess of 200 or 300 hp. Tests have just been satisfactorily completed however, on a hydraulic transmission for use with a 600 hp. Diesel engine for switching service in South America.

Several proposals have been made to use a pair of cylinders mounted on the locomotive frame in the conventional location of steam practice, and to feed these with compressed air, steam or gas obtained from a compressor directly connected to the Diesel engine. If it were merely a question of compressing of the air with the Diesel and then sending it directly to the air cylinders

\* An abstract of the paper presented at Boston, Mass., February 14, 1928, before the New England Railroad Club.

in the locomotive, there is no doubt that although the required flexibility could be obtained without difficulty, the losses in the air compressor and in the air cylinders would be so great as to make the scheme impractical. There is a possibility however, of making use of the exhaust heat of the Diesel engine to warm or superheat the air after it has been through the compressor and before expanding in the locomotive cylinders proper. In this way a considerable proportion of the heat otherwise lost through the exhaust pipe may be regained and it is hoped that in this manner a reasonable fuel economy can be secured, together with flexibility, while maintaining many of the conventional features of the steam locomotive. The wisdom of this last feature seems to be somewhat questionable as complication is thereby introduced. There seems to be a feeling, however, in some quarters that electrical apparatus should be avoided at all cost, due apparently to an unwarranted fear of attempting to introduce electricity on railroads where it had not previously been used. A large air transmission locomotive of this general type is now on test and it will be a matter of considerable interest to see whether the thermal economies obtainable with equipment of this kind can equal those of the electric transmission, or are worth the complications which they necessarily involve.

#### The Kitson-Still Engine

An extremely ingenious locomotive now undergoing tests in England, the Kitson-Still, is one which incorporates steam and Diesel cycles at opposite ends of double acting cylinders. Steam is generated in an oil burning boiler, the water from which also warms the Diesel cylinder jackets. This steam is used for starting the train and bringing it to a speed where the Diesel engine, already warmed up by the heat changes, will begin to fire, and its use is continued at low speeds to increase the tractive force available for acceleration. Steam is also available in the form of reserve power for short period overloads on grades, etc., or may be saved up between the stations, if these are closely spaced, for accelerating after the station stops. On the other hand in long non-stop runs, a small amount of steam may be used continuously in order to improve the economy of the power plant. Use is made of the cylinder jacket heat and exhaust heat of the Diesel engine, while running, to heat the boiler and to permit of cutting out the oil burner while the locomotive is under way. It may be shown by computation that the possible fuel economies of an engine of this type may considerably exceed those of other combinations, but it remains to be seen whether the maintenance of the boiler, which is one of the things we would like to get away from, the steam engine with its valves and control gear, in addition to the Diesel engine itself, may not more than compensate the possibilities of fuel saving. That this system, however, is not without promise is indicated by the fact that the motor ship *Dolius*, using a power plant of cylinder design, has covered some 200,000 miles in the last 3½ years showing excellent fuel economies under practical service conditions.

#### The Clutch and Gear Drive Transmission

Another form of transmission which has possibilities is that of the clutch and gear drive, not unlike that used in our motor cars and trucks. It has been found by extensive experience that gears of the size and weight required for locomotive work cannot be thrown into mesh without injury when travelling at slightly different rotational speeds, as is the case with automobile gears. Therefore, all successful gear boxes incorporate the "constant mesh" principle. That means that the gears

for all the different speeds are constantly engaged and running together but only one gear train at a time actually transmits power while the others spin idly upon their shafts. In some cases, as is the American practice, the gear chosen for operation is brought into mechanical driving connection with the shaft upon which it rotates, by a jaw clutch splined to this shaft and arranged so that it may be slid into engagement with a series of corresponding jaws machined on the hub of the gear. The favorite European practice for engaging the gear wheel with the shaft upon which it rotates, is to use a friction selector clutch for each gear so that any error in judgment on the part of the operator in shifting his gears will be taken up as a momentary sliding or slippage of the clutch plates, rather than destructive clashing and grinding, which is unavoidable with the jaw clutches and which reacts unfavorably on the entire transmission and engine.

Using this selector principle there have been built a number of rail cars, switching locomotives and even main line locomotives such as those furnished last year to the Russian railways and now on order for the Boston & Maine. The latter design merits considerable attention as many of the unsatisfactory features of other gear drives have been carefully avoided. One of these is the avoidance of bevel gearing in the final drive between the reduction gears and the driving wheels, because the bevel gear is relatively difficult to make for large torsional forces and to hold in satisfactory alignment. In this design the bevel gear has therefore, been placed close to the engine where it runs at high speed and low load and all of the jack shafts in the gear box are mounted crosswise with the car and parallel to the driving axles. All of the heavy loads are taken by the spur gears. The selector clutches are each mounted on the ends of stub shafts and serve to connect the shaft to a sleeve upon which the gear is mounted. The clutches are therefore instantaneously removable for inspection or the renewing of worn friction discs without touching any other equipment. In accelerating a heavy train by engaging a clutch between an engine operating at a given minimum speed, and the driving wheels which are at first stationary and then slowly start to revolve, a considerable amount of heat is generated, depending on the minimum speed of the engine, the weight of the train and the time required to bring the train up to the speed for full engagement. This energy is so great that no attempt is made to absorb it in the selector clutches themselves, but in the case of the Krupp locomotive an additional master clutch is used, which is of such size that the heat energy evolved by the slip just referred to, can be absorbed without difficulty or danger. Assuming that the gears and clutches do their work properly, the main drawback to an arrangement of this kind is the fact that owing to a finite number of gear ratios, the train speed is seldom such that the corresponding speed of the Diesel engine will permit it to develop its maximum power and hence the tractive force curve of a geared locomotive is broken like a flight of steps, instead of being continuous, and the maximum power is not available at all train speeds.

A certain interruption is caused when shifting from one speed to the next resulting in cumulative shock as slack is taken up between the draft gear of the cars unless the equipment is skillfully handled.

In comparing the geared Diesel with the geared automobile it must be remembered that the automobile is light and has tremendous reserve power, while the locomotive is attached to a heavy train of cars and will presumably have no more reserve power than is necessary to fulfill its task. There is no doubt but the gear box may be built both lighter and cheaper than any other

form of transmission and it remains to be seen whether its reliability, serviceability and ease of manipulation will be sufficient to make it a real competitor in the larger sizes of the more fully developed electric drive.

The investment cost of the Diesel locomotive is high, the operating costs are low, compared with steam practice. From this it necessarily follows that the harder the Diesel is worked the better its costs compare with steam, particularly if it can be worked long hours. Hence for a light schedule, steam is inherently cheaper while as the daily work is made harder, the Diesel costs become less than those of its predecessor. Just where this point comes of course will be determined largely by the basic factors applying in each case, but it appears that it may be safely assumed to lie in the neighborhood of 150 miles per day for light branch line operation on New England roads.

In conclusion, the survey of the Diesel locomotive question shows that within the last two or three years the question of design has progressed rapidly. Small units are out of the experimental stage and larger ones about to be tested will provide invaluable engineering experience and data. Limits which heretofore prevented the construction of Diesel locomotives of large power are being surmounted and the originally prohibitive weight per horsepower is being rapidly reduced. Reliability and fuel and maintenance economy have been fully demonstrated. The investment charges are bound to remain high but the possession of obsolete steam equipment is not a bar to the purchase of Diesel equipment for those applications to which the latter is suited. The apparently most promising applications are for switching in city yards, operation of industrial tracks, suburban service where the traffic density is not sufficient to warrant electrification, certain types of branch line operation and, particularly where fuel is expensive, long main line hauling.

#### Summary of the Discussion

C. E. Barba (Boston & Maine) was of the opinion that the major factor in the determination of suitable Diesel units should be the selection of a definite horsepower per driver unit by establishing a carrying capacity per pair of drivers from 50,000 lb. to 65,000 lb. as a maximum. From the frame down to the rail, he was of the opinion that steam locomotive practice should be adhered to as closely as possible.

W. G. Knight, (Bangor & Aroostook) brought up the question as to whether a Diesel engine could be designed to give at least the equivalent of 3,000 cylinder hp. without exceeding wheel load and curve limitations. If these limitations could not be met, he was of the opinion that the Diesel locomotive could never take the place of a steam locomotive in heavy freight service. This speaker questioned the availability of the Diesel engine to compete successfully with the steam engine on small branch lines. He elaborated on this point as follows: "We studied the subject very carefully and found the carrying charges on the Diesel locomotive were greatly in excess of the steam train we were using. The amount of labor to be eliminated came to some \$1,800 a year. Therefore, on the basis of the carrying charges and the economy in fuel, the result from a comparison of the two engines showed that we would lose something like \$1,000 a year either in Diesel or in gasoline unit operation."

Mr. Silverman (Boston & Maine) stated that his road is expecting to maintain the Diesel locomotive now being built in Europe for the Boston & Maine, for not in excess of 15 cents a mile. A decided fuel economy in the ratio of five or six to one as compared with coal is anticipated. A guaranteed mechanical efficiency from the engine shaft

to the wheels of 92 per cent on the first stage and 90 per cent on the other stages has been made to the railroad by the builder.

#### The Question of Cost Per Horsepower

W. L. Bean (New York, New Haven & Hartford) brought up the question of initial cost. He stated that a Pacific type locomotive that will develop 2,500 hp. will cost probably not over \$75,000, or at a rate of \$30 per horsepower, and that it is his understanding that a Diesel-electric locomotive will cost about \$200 per horsepower, which would be \$160,000 for an 800-hp. unit. He also stated that his experience with gears has been that trouble may be expected when they are required to handle more than 175 hp. This is based on experience with electric locomotives which handle 175 hp. through pinions. These gears are made of the best heat treated material obtainable and receive special handling in the shop.

Mr. Bacon in his concluding remarks revealed that there is now on test in this country a single engine of 3,000 hp. which will fit inside of a railroad clearance diagram. This engine has 12 cylinders, 16 in. bore by 16 in. stroke, and runs at 700 r.p.m. In answer to the weight per horsepower, Mr. Bacon said: "A few years ago 200 lb. per hp. was thought to be a good weight figure for a bare Diesel engine. The entire modern Diesel locomotive can be built for about that figure, including transmission and frame. It is a figure which is being reached by many of the designers now in the larger units. With some designs you can even get down to less than 175 lb. per hp. for the entire locomotive. A steam locomotive weighs something like 130 to 150 lb. per hp. so that the Diesel is not very far away from it. It remains to be seen whether there is any advantage in trying to bring the Diesel down to the same actual weight as the steam locomotive.

#### The Question of Weight

"Coming down to the weight of the Diesel engine itself, the 1,200 hp. German Diesels in all cases, are in the neighborhood of 50 lb. per hp. A few years ago people did not want to build engines for much less than 100 lb. per hp. At the present time I do not think that any one would consider designing a new engine for railroad service and have the weight over 50 lb. per hp. That is the heavy limit. The new designs now being built, amongst which the Beardmore engines are noteworthy, weigh less than 20 lb. per hp. Another design of which I spoke, developing 3,000 hp. in a single engine, is designed to weigh 19 lb. per hp.

"Obviously the benefits of extreme weight reduction must be balanced against the question of first cost and maintenance. The European builders will talk business on the basis of 20 lb. per hp. They can build to that weight with reasonable speeds of revolutions and reasonable piston speeds, which to a considerable extent control the ultimate weight of the engine. The piston speed is really the governing factor rather than the revolutions per minute. The Diesel engines mentioned have in nearly all cases, a piston speed which is less than that in common use in gasoline-electric rail cars now running around the country.

"It is a question whether it is worth while to play with weights less than 15 or 18 lb. per hp. I do not think we have any desire to do so, because if you take an engine of that weight you will find that it is only a small proportion, around ten per cent of the total locomotive weight. Therefore, if you want to save 100 lb., do not try to whittle it off the Diesel engine crankshaft, cylinder head or timing gears. It is better to leave it in the engine and whittle it off somewhere else.

"One way that weights are being reduced is by structurally combining the engine with the locomotive frame. The locomotive for the Pennsylvania System is built with the frame in a single casting, forming the bed plate for the engine and generator. Similarly, in the compressed air locomotive being built at Esslingen, the main side frames and crank case are bolted together to form a single structural unit. In that way weight can be saved much faster than by reducing the weight of the Diesel engine itself. Another way of saving weight is shown by the Brown-Boveri design where the generator is run faster than the engine crankshaft. This introduces some spur gears. The question is whether the saving in weight is worth the added complication of the gears. It will take actual experience to see, but I think we are safe in saying that Diesel engines can be built at 20 lb. per hp. which will stand up indefinitely without excessive maintenance charges."

#### The Ttractive Force Curve

Mr. Bacon made some interesting comments on the shape of the tractive force curve. The Diesel-electric locomotive and, at intervals, the gear drive locomotive, are capable of developing maximum rated horsepower at high, low and intermediate speeds. Thus, a 1,500-hp. Diesel can put out 1,500 hp., whether the train be going 10, 20, 40 or 60 miles per hour. Losses in the transmission will vary somewhat with the speed but there is always that amount of power available except that in the geared unit, if the maximum permissible speed is reached in its second gear and then the transmission shifted to third gear, the power available drops temporarily from 1,200 hp. to 1,000 hp., but then works up to 1,200 hp. again. Hence, the tractive force curve is substantially hyperbolic, a smooth hyperbola in the case of the electric drive and a notched or stepped approximation with the gear drive. With the steam locomotive the actual horsepower varies considerably with the speed, the tractive force being limited, in turn, by the adhesion, the cylinder size and the capacity of the boiler.

Mr. Bacon next took up the question of the great difference in first cost per horsepower between Diesel and steam equipment and agreed that the cost will range from \$100 to possibly \$200 per horsepower. To absorb the difference between the first costs of the Diesel and steam units, the operating road must make full use of the Diesel unit.

\* \* \*



Mo. Pac. Scenic Limited at Lee's Summit, Mo.

## Freight Car Loading

WASHINGTON, D. C.

**R**EVENUE freight car loading during the week ended March 3 amounted to 959,537 cars, a decrease of 30,326 cars as compared with loading in the corresponding week of 1927 and of 5,472 cars as compared with 1926. Loading of grain and grain products, livestock, forest products and miscellaneous freight was larger than a year ago. Coal loading, which amounted to 171,700 cars, represented a decline of 41,454 cars from the corresponding week of last year.

#### Northwest District Increases

Loading in the Northwestern district showed an increase as compared with a year ago but the totals were smaller in other districts. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

#### Revenue Freight Car Loading

	Week Ended Saturday, March 3, 1928		
Districts	1928	1927	1926
Eastern .....	218,022	228,025	235,567
Allegheny .....	187,109	207,260	196,404
Pocahontas .....	53,275	57,403	50,015
Southern .....	157,064	157,781	160,636
Northwestern .....	125,471	119,089	115,503
Central Western .....	142,811	143,089	132,547
Southwestern .....	75,785	77,216	74,337
Total Western Districts.....	344,067	339,394	322,387
Total All Roads.....	959,537	989,863	965,009
Commodities			
Grain and Grain Products.....	53,448	43,469	40,242
Live Stock .....	30,621	28,031	29,446
Coal .....	171,700	213,154	182,443
Coke .....	11,351	12,578	14,954
Forest Products .....	71,742	69,181	75,960
Ore .....	8,825	10,086	9,829
Merchandise L. C. L.....	258,649	260,474	264,105
Miscellaneous .....	353,201	352,890	348,030
March 3 .....	959,537	989,863	965,009
February 25 .....	869,590	918,858	912,935
February 18 .....	887,891	954,794	932,281
February 11 .....	906,009	962,602	917,625
February 4 .....	926,204	965,664	914,491
Cumulative total, 9 weeks.....	7,996,954	8,548,441	8,329,037

The freight car surplus during the period ended February 29 averaged 372,916 cars, as compared with 385,232 cars on February 23. The total included 155,554 box cars, 168,172 coal cars, 24,591 stock cars and 12,755 refrigerator cars.

#### Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended March 3 totalled 64,382 cars, an increase over the previous week of 3,295 cars, and an increase of 1,296 cars over the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
March 3, 1928.....	64,382	43,533
Feb. 25, 1928.....	61,087	39,266
Feb. 18, 1928.....	64,611	41,421
March 5, 1927.....	63,086	41,341
Cumulative Total for Canada		
March 3, 1928.....	564,809	343,230
March 5, 1927.....	538,568	337,549
March 6, 1926.....	495,185	320,154

H. A. ROWE, chairman of the committee of the Safety Section, A. R. A., which deals with the careful crossing campaign, has issued a circular to the railroads reminding them, for the first 11 months of 1927, the Interstate Commerce Commission reports 124 fewer deaths at crossings than in the preceding year and 445 fewer injuries. As the number of automobiles has increased about 2,000,000 this is an encouraging showing. Mr. Rowe's circular suggests early re-inspection of all grade crossings, removal of things that obstruct the wayfarer's view and attention to other well-known precautions.

## Electric Trucks at Grand Central Terminal \*

By H. A. Currie  
Assistant Electrical Engineer, New York Central

IT is highly important in railroad work, especially in crowded terminals like the Grand Central station in New York, that baggage mail, newspapers, etc., be moved as quickly as possible, in order that space may not be congested. In rush periods, such as Decoration Day, July 4th, and Labor Day, our facilities are taxed to the utmost and it is only with the aid of our electric trucks that we are kept from being swamped. At these crowded seasons portions of our driveway space are fenced off for the piling of mail and baggage and it is almost fascinating to see how these immense piles melt before the attack of the electric truck.

As an example of how baggage is handled in the terminal, a truck load of baggage delivered to us from one of the hotels is backed up against the bumper of the outgoing baggage room, trunks and bags are quickly deposited and are weighed on the platform scales adjoining this unloading point. Our small freight-type trucks pick this baggage up and distribute it to various baggage piles according to their classification. From these piles the baggage is assorted and is collected by drop frame trucks just before train time. The trucks are then taken down the freight elevator to the train track and land the baggage at the baggage car door. Our small trucks are used also for last minute deliveries as they are light and make better speed than the larger drop frame trucks. The average haul for our trucks is approximately 1,000 feet, which includes for incoming baggage a ramp of 10 per cent grade.

### Batteries

A 228 ampere-hour plate type of battery is used, consisting of twelve 15-plate cells assembled in one crate. The batteries are all interchangeable, so that it is a



Loading Mail from Drop Frame Trucks—The Same Type of Truck Is Used for Baggage

simple matter, requiring but a few minutes to change the batteries on a truck. A battery is charged every two days. The truck on which a battery is to be renewed is run into the battery room and by means of a specially constructed hook attached to a hoist suspended from an overhead rail, the battery is taken out and placed in one of the battery racks. A fully charged battery by the

\* Paper presented before the Commercial National Section of the National Electric Light Association.

same process is taken down from the rack and placed in its compartment on the truck.

The life of a battery is approximately 30 months and during this period it is washed once. The batteries are charged three in series from a 220-volt circuit, 110 volts per panel. If less than three batteries are available for charge per plug, resistance equivalent to the resistance of one or two batteries is inserted. A battery man is in constant attendance in the charging room, as 30 batteries are often on charge at one time.

The type of receptacle and plug used on these batteries for making connection to the motor on the one



Small Freight Type Trucks Making a "Last Minute" Baggage Movement

hand and to the charging line on the other, was originally developed by the railroad company shortly after the first trucks were placed in service.

### Truck Maintenance

All general repair work on trucks and electrical equipment is done in the repair room adjoining the battery room, where also brakes are adjusted and running tests made. One foreman and four mechanics constitute the force in this room.

Each truck is given a thorough overhauling every 5,000 miles or about every two-and-one-half years. This work is done at the machine shop at 50th Street and Lexington Avenue.

The trucks in service consist of 50 drop frame double ended trucks and five freight car type single ended

### Material Handled During 1927

Baggage	1,265,163 pieces
Newspapers	30,726 tons
Steamer mail	193,043 sacks
Ordinary mail	14,857 cars
Corpses	2,765
Scenery	563 cars

trucks, making a total of 55. These trucks each have a capacity of 4,000 lb. The first trucks were put in service in April, 1911. The average miles per truck per day is 5.7. Cost of maintenance per truck per month is \$53.00. The cost per mile for maintenance is \$.31. Total truck miles for 1927 was 114,334.

### Operating Experience

In connection with the handling of baggage it is interesting to know that there has been little increase in the last 20 years which is accounted for by the change in fashions, which permits people to travel with much fewer trunks and other baggage.

Severe braking, cutting sharp corners, running through elevator doors, running trucks off platforms all are practices which have to be guarded against as contributing to high cost of maintenance.

Operators are instructed and only properly qualified operators are permitted on the trucks. Experience has shown the importance of this rule as infractions result in damage to operator and truck.

We also have a truck of the elevating type which handles building supplies, such as lumber, cement, paint and plaster, etc., around various floors of the Grand Central building. This truck is also equipped with a commercial license to permit it to operate on the city streets. It is often used for hauling supplies from the terminal up to a distributing point at 50th Street and Lexington Avenue. Several years ago we constructed a snow plow for flanging the sidewalks and roadways adjacent to the terminal. This experiment, however, was not a success as the capacity of the battery was not great enough to supply the amount of power required.

An additional fleet of 42 trucks is used for handling express matter at the terminal. These are operated and maintained by the American Railway Express Company.

## A Friction Spring for 50 and 70-Ton Trucks

THE Frost Railway Supply Company, Penobscot building, Detroit, Mich., has recently placed on the market a friction type coil spring for use in spring clusters on freight car trucks. This spring conforms to A. R. A. standards as to diameter and height and is interchangeable with coil springs used in A. R. A.

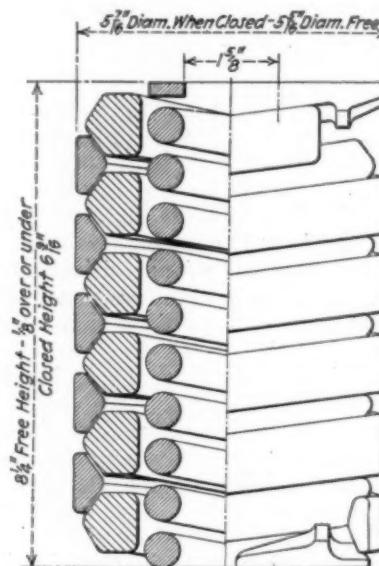


Frost Friction Truck Springs for a 70-Ton Car

Class D and H clusters for 50 and 70-ton trucks. The new spring is of the double coil type, the outer coil being an adaptation of the Harvey friction spring designed, in this case, to act as a suspension spring instead of a buffer spring. The inner coil is of the conventional helical type.

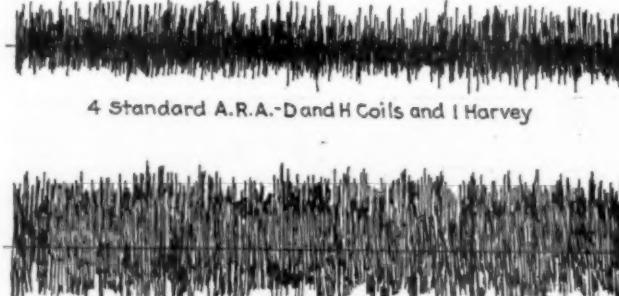
In developing this spring the aim of the manufacturers has been to provide a spring which, used in the cluster in combination with standard A. R. A. coil springs, will act as a snubber or dampener of spring

reaction to prevent the excessive rolling of freight cars with the resultant damage to car trucks and, in many cases, derailment of the car. The Frost friction spring is designed to absorb a part of the energy set up by



Sectional View of Frost Frictional Spring Showing Inner and Outer Coils

a rocking car without the undesirable kick-back inherent in helical springs. The action of the new spring is best described by a comparison of tests on two five-spring clusters such as used for 70-ton trucks, one consisting of the A. R. A. Class H spring and the other four A. R. A. Class H coils in combination with one



4 Standard A.R.A.-D and H Coils and 1 Harvey



Composite Full Load Spring Record Obtained on a 70-ton Car Traveling 250 Miles

Harvey friction coil. The table will show the compression and release pressures at the various heights from free to solid for both spring arrangements.

Comparison of Load and Release Pressures of a Class H and a Frost Friction Spring

Height of spring, in.	A. R. A. Class H cluster		Frost friction spring (Four standard coils, one Harvey spring)	
	Compression, lb.	Release, lb.	Compression, lb.	Release, lb.
8-1/4	0	0	0	0
7-1/8	58,000	54,000	61,000	48,000
7	65,000	61,000	69,000	54,000
6-7/8	71,000	67,000	76,000	60,000
6-13/16	74,000	71,000	80,000	63,000
6-3/4	77,000	73,000	85,000	66,000
6-11/16	80,000	76,000	90,000	69,000
6-5/8	85,000	81,000	103,000	78,000
6-9/16	98,000	91,000	146,000	109,000

It may be seen that, owing to an increase in spring capacity, the working range of the Frost spring has

been somewhat reduced; that, on release the spring gives out materially less energy than is applied to it, and that a yielding peak of high capacity is available at the end of the travel to absorb undue shocks such as set up by a rolling car. The combination of the Harvey friction spring and A. R. A. standard coils in the same cluster is patented.

## Minority of Senate Committee Defends Mr. Esch

WASHINGTON, D. C.

**S**ENATOR FESS, of Ohio, has filed with the Senate a report on behalf of the minority of the committee on interstate commerce who voted in favor of confirmation of the reappointment of J. J. Esch as a member of the Interstate Commerce Commission, declaring that they believe his rejection "would be fraught with grave consequences which will appear to all upon examination of the facts."

"The effort to refuse confirmation," the minority report says, "seems no more than an attempt by defeated and dissatisfied litigants to punish the court (in this case the commission) first because it reached a decision on an issue of fact contrary to their contention, and, secondly, because the court has construed a law admittedly vague and indefinite in a manner that was adverse to their interests. There is not as the matter now stands and there cannot be any charge that either the commission or the individual member whose confirmation is now before us, is anything but fair and impartial. In all former cases, so far as I know, the Senate has stood for an independent and untrammeled commission, and it is hoped that it will not depart from that principle in this case, but will sustain it by the confirmation of Mr. Esch.

"Although at the commencement of the investigation by the committee there were numerous charges, both direct and indirect, assailing his personal integrity, these seem to have been all withdrawn," said Senator Fess. "The attack upon the official acts of Mr. Esch seem all to come down to what he has done on the lake cargo coal case. In that case, upon its first determination by the commission, he voted against Pennsylvania and Ohio as competitors of West Virginia, Kentucky, Virginia and Tennessee, and on the second submission of the case he voted in favor of Pennsylvania and Ohio. But it appeared upon the hearing that in the interim between the two votes Mr. Esch, as did the rest of the commission, had the benefit of extended further hearings, a mass of further evidence which embraced some 2,000 pages of testimony and almost 200 documentary exhibits. To the unbiased mind free from personal or sectional interest these facts supply ample ground to a man of unimpeachable character such as Mr. Esch is now admitted to be, upon which to change his position in a highly controversial rate case. . . .

"The fact of the matter is that, boiled down, the criticism is that Mr. Esch in determining the issue of the cost of transportation relied too much upon distance and too little upon other transportation conditions which all affect cost. . . . In so far as Congress has ever given to the commission anything that approaches a rule of rate-making, it has relied upon distance in the long and short haul provision of section 4. Why, therefore, should the Senate condemn Mr. Esch because he also gives consideration to the only element of trans-

portation cost which the Senate has specifically said must be considered?

"The Interstate Commerce Commission is charged with duties connected with properties valued at perhaps thirty billions of dollars, employing two million people, operating a service that affects our entire population. Its administration involves the most complicated problems of the second industry in the nation. It was created to protect the public from possible injustices. . . . The judgments, to be just and reasonably satisfactory, must be the result of decisions reached impartially, free from political influence, sectional pressure, or local interests. A commission's decision to be of value must be unhindered to judge by the facts upon which the case rests.

"The Interstate Commerce Commission, not unlike the Supreme Court, must be free from duress or threat, else its decisions will not be founded in justice or fairness, and its capacity as an administrative agency will be totally ruined. There can be no justice where judgments are to result of threatened punishment.

"Rejection of this confirmation will be properly a warning to the members of this commission that in any decision the defeated litigant will appeal his case to the Senate for political treatment, making the appellate tribunal this political body instead of the court, the judicial body.

"The immediate result of such action will tend to destroy the independence of this great governmental agency, which for forty years and up to this time has been free from a breath of suspicion of any political bias or prejudice."

It was expected that the debate on the question of confirmation would be taken up in the Senate in executive session on March 16.

### Commission Will Not Resign

An illustration of the tension created by the lake cargo decision and controversy over confirmation of Mr. Esch was afforded when the Washington Star on March 8 published a story to the effect that several resignations among members of the commission might be looked for shortly and quoting an unnamed commissioner as having declared that the commission ought to resign in a body as a protest against the action of the Senate committee. Rumors that the commission or some of its members were about to resign were rapidly circulated about the Capitol and in newspaper offices and many queries as to their truth reached the commission's offices. Denials were made but Senator Neely, of West Virginia, read the Star article in the Senate on March 9, and stated that he would later introduce a resolution calling on the commission for an explanation. The resolution was not introduced, however, and by the time his speech appeared in printed and revised form in the Congressional Record next morning it merely expressed his "hope that the commission will promptly inform the Senate whether the article in question correctly states the attitude and the intentions of the members of the commission in the matter of the pending Esch confirmation."

"It is impossible for me to believe", the official record quoted him as saying, "that the members of the commission would for an instant attempt, or think of attempting, to intimidate or coerce the Senate into pusillanimously surrendering its lawful right and violating its lawful duty to determine the qualifications of appointees to membership on the commission. If this newspaper article be justified by the facts in the case, it discloses the most extraordinary and reprehensible

attempt in the history of the government to intimidate the United States Senate."

#### Supplemental Order in Coal Case

On March 10 the commission made public a supplemental order in the lake cargo coal rate case, dated March 8, amending and correcting the formal finding of its decision made public on February 25 in which it had found that the reduced rates proposed by the railroads serving the southern coal district fields "have not been justified." "Upon further consideration of the record, and for the clarification of the findings in the report and order entered on February 21," the last paragraph of the report was made to read: "We find that the proposed rates would be unjust and unreasonable, and have not been justified. We shall require the cancellation of the suspended schedules and discontinue this proceeding."

In a concurring opinion Commissioner Eastman had characterized the former finding as "a finding of relative unreasonableness so far as section 1 is concerned" and declared that he believed the doctrine of relative unreasonableness as here applied to be unsound.

At a meeting of coal operators from the southern district held in Washington on March 9 it was decided to institute litigation in the federal courts in an effort to set aside the commission's decision. An effort was made to ascertain whether the railroads serving the southern district would join the litigation and it was stated that they were still consulting with counsel on the subject. Counsel for the southern operators have been working for some time on the question of an appeal to the courts.

## An Air Operated Horn for Railway Service

**A** WARNING signal device for use on rail motor cars and electric and steam locomotives, has recently been placed on the market by the Westinghouse Air Brake Company, Wilmerding, Pa. This



The Westinghouse Pneumatic Horn for Use on Rail Motor Cars and Locomotives

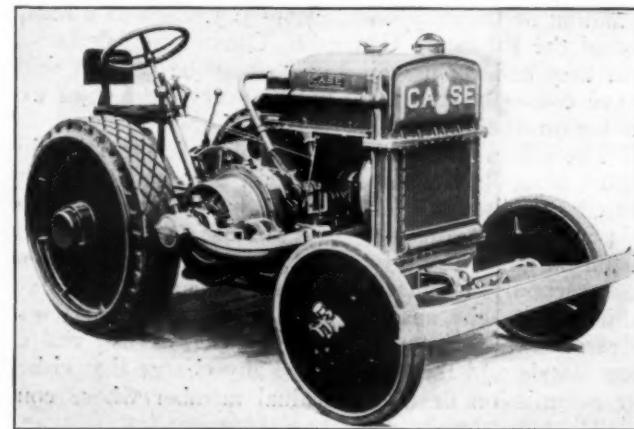
horn has a harmonious tone combination which is easily distinguished from other right of way noises. It uses little air, requires no special reducing valve, operates successfully over a wide range of pressures and is of sturdy and durable design.

The diaphragm or vibrating unit, enclosed in a cast base, is a substantial phosphor bronze disc uniquely balanced by a small weight. The bell of the horn is highly

burnished, heavy gage instrument brass. The horn is available in various types and sizes to obtain different tonal qualities, and in combinations for producing a pleasing chime effect when desired. It is designated as the Pneumatic horn.

## A New Industrial Tractor

**T**HE J. I. Case Threshing Machine Company, Inc., Racine, Wis., has developed and placed on the market a new industrial tractor for use in freight houses, railway shops, storehouses and other places where materials are to be moved on trailers. The machine has been built compact and low to permit its oper-



Tractor for Use in Close Quarters

ation in close quarters and under small clearances. It is said that it can be turned completely in a radius of 10 ft. and has great stability on account of its low center of gravity.

The tractor is equipped with a pulley so that it may be used to operate belt-driven machines as well as for hauling. Its power is rated at 12 hp. at the drawbar and 20 hp. at the pulley, with an ample reserve for emergencies. The engine is supplied with a quick-acting throttling governor to regulate the speed of the engine quickly for variations in load. Approximately two-thirds of the weight of the tractor is borne by the rear wheels, which have rubber tires and are cast hollow so that they may be filled with 400 to 500 lb. of sand when necessary to secure additional traction.

A spring seat with a back is provided for the driver, from which he has a good view and is within easy reach of all of the necessary controls. The arrangement of the machine is said to be so simple that it can be operated or adjusted by anyone with ordinary ability and the steering gear is designed to move the front wheels quickly without permitting them to jerk out of control.

**A COAST DEFENCE GUN**—A 14-in. rifle—weighing, with its carriage and fittings, 735,000 lb., was moved last week by the Boston & Maine and the New York, New Haven & Hartford, from Watertown, Mass., to the Brooklyn (N. Y.) Navy Yard. The gun was shipped from the Arsenal at Watertown, to Brooklyn to be loaded on a warship to go to the Panama Canal Zone. The barrel of the gun, 70 ft. long and weighing 297,000 lb., was carried on a 16-wheel car, owned by the government. The carriage for the gun (189 tons) was moved on its own wheels, and a separate platform car was used for 30 tons of parts.

## Accident Investigations July, August, September

THE Interstate Commerce Commission has issued its quarterly summary of accident investigations, No. 33, which is for the three months ending with September, 1927. This bulletin covers ten collisions, eight derailments and one fire, as follows:

### Train Accidents Investigated—July, August and September, 1927

1213. St. Louis-San Francisco	Victoria, Miss. (1925)	Oct. 27	D
1346. Southern	Gilkey, N. C.	July 2	D
1347. New York Central	Iona Island, N. Y.	July 5	C
1348. { Toledo Terminal } 1349. { Toledo & Indiana }	Vulcan, Ohio	July 12	C
1349. Oklahoma	Shell Creek, Okla.	July 19	C
1350. Chicago Great Western	Cannon Falls, Minn.	July 21	C
1351. Pennsylvania	Terre Haute, Ind.	Aug. 5	D
1352. Chicago, Mil., & St. Paul	Sturtevant, Wis.	Aug. 12	D
1353. Baltimore & Ohio	Cridersville, Ohio	Aug. 13	F
1354. Nashville C. & St. Louis	Westport, Tenn.	Aug. 15	C
1355. Chicago, Burl., & Quincy	Gregory, Mo.	Aug. 18	D
1356. Central Union Depot & Ry.	Cincinnati, Ohio	Aug. 28	C
1357. Pennsylvania	Gallitzin, Pa.	Aug. 29	D
1358. { Baltimore & Ohio 1359. { New York, Chic., & St. L.	Painesville, Ohio	Aug. 30	C
1359. Southern	Francisco, Ind.	Sept. 3	C
1360. Evansville & Ohio Valley	Clay, Ind.	Sept. 7	C
1362. Delaware, Lack., & Western	Cranberry Lake, N. J.	Sept. 15	D
1363. Michigan Central	Carpenter, Mich.	Sept. 18	C
1364. Baltimore & Ohio	Cassell, Ohio	Sept. 27	D

Abstracts of the reports on the five accidents in July were given in the *Railway Age* of September 3, page 444; October 8, page 687, and December 3, page 1108. The accident at Cridersville, Ohio, August 13, was noticed in the *Railway Age* of December 17, page 1210. The report of the commission on the derailment at Gallitzin, Pa., on August 29, was noticed in the issue of November 12, page 934. The rest of those occurring in August were noticed in the issue of February 4, page 319.

The derailment at Victoria, Mass., October 27, 1925, which is included in this bulletin, was reported in the *Railway Age* of October 31, 1925, page 813; December 5, 1925, page 1018; and November 12, 1927, page 947, the last mentioned article being an abstract of the commission's report, the issuance of which was delayed because of the long time required for investigation.

The five reports covering accidents in September are abstracted below:

**Southern, Francisco, Ind.**, September 3, 1:15 a.m.—Westbound passenger train No. 2, consisting of a locomotive and six cars, moving at about 50 miles an hour, ran over a misplaced switch and into the head of a freight train standing on the side track, making a very bad wreck. The engineman and fireman of the passenger train and the fireman of the freight (which was a train of the Evansville, Indianapolis & Terre Haute) were killed and 12 passengers, two postal clerks and three employees were injured. The switch which was misplaced was in a defective condition and the lamp on the switch stand displayed a clear signal. The crank was disconnected from the bottom of the vertical shaft, because the set screw which should have held it did not hold. The report said that had a bolt hole been drilled through the bottom of the shaft, according to the design, with the crank properly secured, or had the counter bore in the shaft been properly centered so as to receive the set screw, the defective condition that was found would not have arisen. The men in charge of the freight had intended to proceed from the siding to the main track prior to the arrival of the passenger train, but this plan was changed; and then the switch was left in the wrong position by reason of the defective light; the brakeman who turned the switch did not notice that the light remained motionless, and the con-

ductor, later, seeing the green light, assumed that the switch had been closed. The brakeman assumed that some other person had closed it while he was going to and from the telephone booth.

**Evansville & Ohio Valley, Clay, Ind.**, September 7.—Electric motor car No. 117, moving northward at about 40 miles an hour, ran over a misplaced switch and collided with a freight car standing on a side track; and the motor-conductor was killed. Also, three passengers and one other employee were killed and 58 passengers were injured. This road has automatic block signals of some kind but at the time of this collision, trains were being operated by a special arrangement superseding the timetable rules, and a special switch tender was employed. This man insisted that he closed the switch following the passage of car No. 117 southward, a short time prior to the collision, and he gave a signal to the car on the northbound trip indicating that the main track was clear. There was some testimony to the effect that a trespasser may have misplaced the switch, but no conclusive evidence. The view of the switchstand from an approaching car is obscured by block signal boxes, on poles; and the report recommends that this view be improved.

**Delaware, Lackawanna & Western (Sussex Branch)**  
**Cranberry Lake, N. J.**, September 15.—Westbound extra 873 consisting of two locomotives coupled together and moving backward at about 25 miles an hour, was derailed on a curve and one of the firemen was killed and the other injured, both having been on the top of the leading tender at the time of the derailment. Careful examination was made of the locomotives and the track but the cause of the derailment could not be ascertained.

**Michigan Central, Carpenter, Mich.**, September 18.—Northbound passenger train No. 203, moving at about 60 miles an hour, ran over a misplaced switch and into the head of a freight train standing on the side track, making a very bad wreck; the baggeman was killed and three other employees were injured. The switch had been misplaced immediately in front of the fast moving passenger train by a brakeman on the freight, who became confused and misunderstood the instructions of the freight engineman. The brakeman, in regular service only two days, had gone to the switch preparatory to turning it after the passenger train should have passed. While there, the engineman, seeing that the brakeman, in disregard of the rule, was standing too near the track, made hand motions to him, intending to warn him away, but the brakeman in his confusion assumed that these motions called for the movement of the switch, apparently taking no notice of the position of the rails. He had made a number of trips as a student and had received a book of rules but "had not had an opportunity to study the rules."

**Baltimore & Ohio, Cassell, Ohio**, September 27.—Eastbound passenger train No. 34, moving at about 30 miles an hour, was derailed at a loose or defective switch (which had been damaged by a brake beam that had dropped from a car in a freight train a short time before) and the locomotive was overturned. The engineman and fireman were killed and three passengers, one mail clerk and one express messenger were injured. An examination of the locomotive, after the wreck, showed that the leading truck had tended to run to the left side of the track, but it could not be determined whether or not this contributed to the derailment. The main trouble was the truss rod of a brake beam which snapped off in the thread at the south side of the truck.

## Railroad Practice in 1842

**A**MONG the railroad rule-books of antiquarian interest that have been noticed in the press within recent years, the oldest that is now recalled is one dated 1852, extracts from which were reprinted in the *Railway Age* of May 17, 1927, page 1404 (Delaware, Lackawanna & Western). Herewith the *Railway Age* is able to lay before the reader the contents of one which is ten years older than that, namely 1842; the

**"REGULATIONS FOR THE TRANSPORTATION DEPARTMENT  
OF THE  
WESTERN RAIL ROAD"**

This little book of 18 pages, 3½ in. by 5½ in., was printed at Springfield (Massachusetts) by Wood & Rupp. The copy is now the property of the Henry E. Huntington Library and Art Gallery, San Marino, California. It was one of several hundred books in a railroad library brought from England a few years ago and purchased by the late Mr. Huntington.

The book contains no name of any officer and there is nothing to indicate who prepared it. The Boston & Worcester Railroad was completed from Boston westward, 44 miles, to Worcester in 1835, and the Western Railroad, from Worcester westward to Albany, N. Y., 156 miles, was opened to Springfield, 54 miles, in 1839 and to Albany in December, 1841 (temporarily using a part of the Hudson & Berkshire, a dilapidated railroad, between State Line and Chatham.) The Boston & Worcester and the Western were consolidated as the Boston & Albany on December 1, 1867.

George Bliss, who was president of the Western for many years, wrote, in 1863, a historical memoir of the road; and from this memoir it appears that in March, 1842, Bliss succeeded T. B. Wales as president (and thereafter he performed the duties both of president and of "agent" which had been his title theretofore). The engineer of the road in 1841, was Major George W. Whistler, well-known in railroad history as the man who resigned from the Western to go to Russia to build the railroad from St. Petersburg to Moscow. Whistler's departure from the Western Railroad was in June, 1842.

It will be seen that under these rules, the chief operating officer was the engineer (Whistler) and it seems likely that he was the author or editor of this book. In September, 1842, James Barnes, who had been acting master of transportation at Springfield was appointed engineer; and for some time thereafter, Barnes' name appeared on posters as superintendent and engineer. The masters of transportation, as will be seen, were substantially equivalent to the train master or assistant superintendent of today. Each of these officers had to manage only about 50 miles of line.

It will be noted that the train rules have nothing to say about a time interval, or superiority of one train over another at meeting points. These features, no doubt, were covered in the timetable. In a facsimile of a timetable of the line west of Springfield, dated 1859, which was published a few years ago, the meeting points are all recited at the foot of the table, with no mention of superiority. At this time a second track was in use from the Hudson River eastward to the Massachusetts line. There was a rule which made eastbound trains superior to westbound, but which apparently was subject to some modification not stated on the face of the table. By 1859, there was a telegraph line the whole length of the road, but evidently it was very little used for train operations, and the telegraph offices were few and far between.

### The Rules

#### WESTERN RAIL ROAD

1. The road shall be divided into three divisions—as follows:  
1st From Worcester to Springfield;  
2d " Springfield " Pittsfield;  
3d " Pittsfield " Albany;

each division being under the care of a Road Master.

2. Each Road Master shall be charged with all repairs of the road bed and the track, together with the culverts, bridges and buildings at the way stations.

3. Each division shall be divided into suitable sections,—to each of which there shall be assigned permanently one superintendent, with as many hands as the Road Master may judge necessary for keeping said division in good running order; and each of these parties shall be furnished with a hand car for the conveyance of themselves and tools, which shall be run over their respective divisions every morning before the passing of the trains.

4. The Road Master shall keep a journal of his operations—stating the several points at which labor has been performed, the nature and amount of the same, the results produced, in order that the experience thus acquired may be rendered serviceable in subsequent operations.

5. He will at the end of each month make a report to the Engineer of his proceedings, with such suggestions as he may deem necessary.

6. During the winter, when the road is liable to be obstructed by snow and ice, he will be particularly attentive, and will render such aid as may be necessary to forward the trains with the least possible delay.

#### RUNNING.

1. The Cars in all the trains, shall be connected with double fastenings.

2. In descending the grades higher than 60 ft. per mile passenger trains shall not exceed 18 miles per hour, and merchandise trains shall not exceed ten miles per hour.

#### CONDUCTORS.

1. It shall be the duty of the Conductor to be with and conduct the train to its station, and to see that all baggage and freight is loaded and in readiness to start at the appointed time.

2. Whenever a train arrives at either end of the road, it shall be the duty of the Conductor of such train—after he shall have given the necessary attention to the passengers on their leaving the cars—to examine the cars, and to collect all baggage, packages or other articles left by passengers, which he shall immediately deliver over to the baggage master, whose duty it shall be to enter the same on his book with memorandum of date, and particular train, and such marks as may be found on each package.

3. It shall be the duty of the Conductor, (after the passengers shall have left the train and he shall have made his inspection and delivered over the baggage left) to proceed with the train to the car house and there give his personal attention to the changing and preparing the trains for the next trip, and he shall not leave the depot during the hours that all others are required to be there without permission of the person in charge.

4. The Conductor while on duty shall wear the badge of his office—and it shall be his duty to see that the Brakemen of his train do the same.

5. All Brakemen are under the immediate direction of the Conductor of the train to which they belong, and are required to obey any directions he may give them.

6. While on the road the Conductor has sole charge of the train. He will direct the Engine men when and where to stop and when to start.

7. The Conductor will report immediately on his arrival at the depot, any disobedience of orders on the part of the Engine men, or neglect of Depot Agents, or others under his charge. He will also report immediately on his arrival the cause of unusual delay, which reports will be entered on the journal kept at the office.

8. Trains will at times move round curves with care, and with a good look-out—the engine bell and whistle both being used at intervals of time until the engine has passed from the curve on to the straight line.

9. The engine bell will be sounded when a train is within eighty rods of a crossing (which it will approach with care) and continue to be sounded until the crossing is made.

10. If a train be detained on the road from any cause, and is unable to proceed, the Conductor will send a Brakeman to the nearest point for assistance, with instructions to procure a horse if possible, to enable him to proceed without unnecessary delay. And if he is expecting to meet a train on the road he will send another Brakeman forward with his signal, who will

proceed with all possible dispatch till he reach the train expected, with which he will return to his train. If another train is following he will send another Brakeman to meet it with a signal.

11. The Conductor will attend the brake of the first car in the train, and his station while under way and not otherwise employed, shall be on the platform outside the car, and whenever he may require the engine to stop will pull the check connected with the engine bell—this check-line will extend from the bell back to the last car in the train, and will be pulled by any Brakeman in case of accident.

12. It shall be the duty of the Engineman to keep a good look-out ahead; and whenever he shall see cause to stop the train or slacken the speed, he shall shut off the steam and blow the engine whistle, as the signal for applying all the brakes.

13. Conductors will daily compare and regulate their time at the Depots.

## Depreciation Hearings Resumed

WASHINGTON, D. C.

**H**EARINGS before Commissioner Eastman and Examiner Bunten of the Interstate Commerce Commission on the commission's proposed depreciation order, the effective date of which has been postponed, were resumed on March 14, when testimony on behalf of the railroads in opposition to or in criticism of features of the order was continued.

W. R. Cole, president of the Louisville & Nashville, expressed the opinion that such a system of depreciation accounting as proposed is not necessary and would serve no useful purpose as applied to railroads. He said that depreciation accounting for equipment is all right and should be continued because it is a practice of long standing but that he thought as applied to fixed structures it is not necessary except for such items as are of sufficient importance that their retirement would greatly distort the operating expenses for a single year. He said that when he became president of the L. & N. and found that it had a practice of depreciation accounting for property other than equipment he had sought to abolish it, but that he had been advised not to take the step because of the pending proposals of the commission.

Mr. Cole was followed by G. J. Bunting, vice-president of the Illinois Central, who read into the record a detailed analysis and criticism of the commission's order, pointing out incidentally the great cost that would be involved in keeping the records it would require. He said he was firmly convinced that the railroads cannot make a practical application of the order and that what can be done with it from a practical standpoint does not accomplish what the commission seeks.

In concluding his statement Mr. Bunting said: "I believe I have fully informed the commission, from my study of the order, that:

"Instead of permitting it to police the provisions, with respect to recapture, it will, through the medium of this order, place itself in a position whereby it is less fortunate in this respect than it has ever been heretofore, for the reason that it has gotten away from the actuality and definiteness in the matter of accounting, and surrounded the accounts with assumptions, estimates and prognostications, so that manipulation of the accounts can be the order of the day by any person or corporation that may so desire or finds it expedient for such action.

"The plan does not offer or disclose actual cost of operation, but it does disclose the cost of operation as someone estimates it should be or desires it should be, regardless of what the actual cost may be." Mr. Bunting also said in part:

"To attempt depreciation accounts and reserves for the various classes of material composing track struc-

ture, involving as it does a 'never-ending' service life under continuous upkeep, will result in confusion, suggests endless manipulation, obliterates a function of management through the lack of comparative information as to cost of upkeep, and unjustifiably imposes upon the railroads excessive accounting without real benefits.

"There should be created no depreciation reserve with respect to any property, the identity of which cannot be maintained to the time of retirement. In the absence of such identification, the question as to whether or not operating expenses have absorbed the full book value of the property under depreciation is never answered, and the absence of this answer nullifies the depreciation theory. Whenever it is impossible to secure exactness, the maintenance or upkeep theory should be substituted and, with respect to such items as ties, rails, ballast and other materials composing the track structure, the depreciation theory should not be applied for that reason.

"To attempt to create retirement reserves spread over the lives of property, and call such reserves depreciation reserves, is mere accounting terminology and a convenience for the purpose of spreading the burden of the expense over a period of time, and does not represent a lessening of value of the property undergoing the so-called depreciation accrual. It is impossible to create reserves based upon age, decay and such other elements that individual views may inject as entering into and forming a part of a so-called depreciation reserve that can be used as a measure of lessening value. It would be just as unreasonable to anticipate accretions due to price changes and include such accretions in the income account. They are anticipatory of events to come, the materialization of which is uncertain. The order requires that the amount determined as 'past accrued depreciation' be credited to the depreciation reserve and correspondingly charged to a suspense account on the debit side of the balance sheet. The effect of this is to create a reserve liability, which is offset on the balance sheet in a way, which must eventually be charged to profit and loss. There will be large amounts added to the so-called depreciable value of property, which have been previously charged to operating expenses, income or profit and loss, which will again be lodged in profit and loss through the medium of so-called current depreciation charges or through the final disposition of the so-called 'past accrued depreciation' as an arbitrary reduction of the profit and loss balance. This, I believe, will amount to the large total of more than \$71,000,000 for the Illinois Central properties.

"Every requirement of the order has a tendency to increase the already burdensome volume of detail incident to accounting, and no provision of the order reacts toward the simplification of this work."

\* \* \*



On the Boston & Worcester R. R.—Built by William Mason, March, 1867

## Communications and Books

### Poor Salesmanship for Safety?

EAST PITTSBURGH, PA.

TO THE EDITOR:

I have just read your editorial in February 18, "Selling the Public on Railway Safety."

Actually, the railroads seem to be unselling this feature. Practically every time I purchase a railroad ticket, the agent attempts to sell me some accident insurance along with it. He instills a sense of fear in my mind which may not be justified, but I am always glad when the trip is ended.

J. M. LABBERTON.

### New Books

*L'Electrification des Principales Lignes des Chemins de Fer Federaux*, by Jean Goettler. 56 Pages. 6 in. by 9 in. Bound in Paper. Published by Bolliger & Eicher, Berne, Switzerland. Price, 2 Swiss francs.

This well-printed booklet is an interesting popular account of the electrification of the government railways in Switzerland, the program for which, involving principal main lines, is nearing completion. The work done in the current year will bring the total electrified route mileage up to 984. The booklet is in French, but it is simply written and easy for those whose knowledge of that tongue goes little beyond acquaintance. There is a short historical sketch, a description of the various hydro-electric plants, something on transmission lines and substations, and other chapters on contact lines, rolling stock and operation. The illustrations are numerous and excellent.

*The Anthracite Railroads*. By J. I. Bogen. 273 pages, with maps. 8½ in. by 5½ in. Bound in boards. Price \$4.25. Published by the Ronald Press Company, New York.

In dealing with those railroads having their beginnings in the coal fields of Pennsylvania, the author has presented a history of the Reading, the Delaware, Lackawanna & Western, the Lehigh Valley, the Central of New Jersey and the Delaware & Hudson, from the days when the promise of profits from coal traffic first stirred the imagination of men to conceive the building of carriers for that traffic, down to the present. He shows, of course, the early competition with transportation by water, the early political difficulties and the continued financial troubles through the years of panic and those in which every effort was being made to build up the different railroads.

In closing his book, Mr. Bogen runs over the present situation on different lines, contrasts the present with the period of growth after the Civil War, and considers the future of the anthracite railroads. He points out that the consolidation program when carried out may do away entirely with the distinct identity of anthracite roads as the different and larger systems absorb the anthracite lines.

*Castles*, by Sir Charles Oman, K. B. E. 229 Pages, 7 in. by 10 in. Richly illustrated with drawings, color plates, photographs and maps. Published by the Great Western Railway, London. Price, 5s.

*The 10:30 Limited*, by W. G. Chapman, 130 Pages. 5 in. by 7½ in. Illustrated. Bound in paper. Published by the Great Western Railway, London. Price, 1s.

*Brunel and After*, by Archibald Williams. 205 Pages. 5 in. by 7½ in. Illustrated. Bound in Paper. Published by the Great Western Railway, London. Price, 1s.

*The Channel Islands*. 57 Pages, 5 in. by 7½ in., exclusive of illustrations. Bound in paper. Published by the Great Western Railway, London. Price, 1s.

*Southern Ireland*. 66 Pages, 5 in. by 7½ in., exclusive of illustrations. Bound in paper. Published by the Great Western Railway, London. Price, 1s.

*The Cader Country*. 45 Pages, 5 in. by 7½ in., exclusive of illustrations. Bound in paper. Published by the Great Western Railway, London. Price 1s.

*Twixt Rail and Sea*, by W. G. Chapman, 148 Pages, 5 in. by 7½ in. Illustrated. Bound in paper. Published by the Great Western Railway, London. Price, 1s.

*Holiday Haunts (1928 edition)*. 964 Pages, 5½ in. by 8½ in. Illustrated with photographs and maps. Bound in paper. Published by the Great Western Railway, London. Price, 1s.

The preparation of advertising booklets is not the easiest of jobs. The compiler must, of course, adequately portray the excellence of the commodity he has for sale, but in doing this he must take care not to presume too far on the credulity of his readers. If his commodity really has all the merits he believes it to have, and if they are as evident as he believes them to be, perhaps the best advertising strategy is merely to describe the commodity, without superlatives, trusting the intelligence of the reader to find its merits. But this is not as easy to do as it may sound. It is much simpler to voice one's enthusiasm about something one knows well than it is to give a temperate description of it. One's own enthusiasm arises from a thorough knowledge of the subject; it has a basis and a background. But one may try to impart the enthusiasm to others without first conveying to them the knowledge upon which the enthusiasm can be based.

The books and pamphlets listed above are excellent examples of literature designed to impart a background of knowledge upon which appeals to enthusiasm may be based, subordinating the direct sales appeal to reader interest. Of them "Castles" is probably the most ambitious. It is a large volume, handsomely printed and richly illustrated, prepared by a reputable scholar and has not the slightest direct sales appeal.

Yet few can read the book (and it is easy to read) without experiencing a surge of desire to see some of the places it describes.

"The 10:30 Limited" describes a trip from London to Penzance on the Great Western's "Cornish Riviera Express" in terms to appeal to "boys of all ages." Incidentally it imparts a great deal of information about railway operation, locomotive construction, etc. Our copy bears the legend "Seventy-first thousand," and we do not wonder at it.

"Brunel and After" is a popularly written historical sketch of the railway. "The Channel Islands," "Southern Ireland" and the "Cader Country" described the scenic, historical and resort attractions of regions served by the railway. "Twixt Rail and Sea," which is likewise a book for "boys of all ages," describes dock and harbor facilities.

"Holiday Haunts" is the most prodigious resort guide we have ever seen. It covers the entire Great Western territory—the West of England, Wales, Southern Ireland, and Isle of Man and the Channel Islands, with a great deal of text matter describing briefly almost every point of interest to vacationists; it catalogs available accommodations at every point, from large hotels down to the lady who might be induced to take a couple of "paying guests." In all it contains 964 pages, many of them advertisements.

These books are but a selection from a much larger number issued by the railway. How can a railway afford to distribute such expensive literature as this to attract passenger business? The answer is that the distribution is not free; each publication has a price—generally low, but probably enough to defray most of the actual manufacturing costs of the books.

The English public is accustomed to paying for such material, and thus the problem of the railway in justifying the expenditure for really adequate descriptive literature is immensely simplified. A glance at these publications will con-

vince anyone that the company's publicity department has taken full advantage of its opportunity and is issuing literature upon which experts would be put to it to offer suggestions for improvements.

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*The Yankee of the Yards—The Biography of Gustavus F. Swift* by Louis F. Swift, and Arthur Van Vlissengen, Jr. In this story of the life of the founder of Swift & Co. there is valuable data on the beginnings of refrigerator car service. Pub. by A. W. Shaw Co., Chicago, Ill. \$3.

*Vegetable Statistics—Year Ended December 31, 1926, With Comparable Data For Earlier Years*, prepared by Bureau of Agricultural Economics. Statistical Bulletin No. 22, U. S. Dept. of Agriculture. "Car-lot shipments" p. 82-148, "Shipments and unloads" p. 149-233, "Freight rates" p. 245. 268 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

*Interstate Commerce Commission—Organization and Administration*, by Prof. Winthrop M. Daniels. This is a non-technical description of the Commission and how it works issued as Traffic Management Manual no. 49 of the LaSalle Extension University. The charts showing the relationships of the bureaus and sections should be very helpful. 88 p. Pub. by LaSalle Extension University, Chicago.

### Periodical Articles

*Are Railroads Suffering from Too Much Regulation?* by Pierce H. Fulton. Magazine of Wall Street, March 10, 1928, p. 836-839, 903-908.

*Golden Arrows*, by Nancy Hoyt. Odd adventures of two travelers on the "Golden Arrow" one of the French "trains de luxe." Harper's Bazaar, March, 1928, p. 73, 150, 152.

*Operation of Austrian Federal Railways*, by H. Lawrence Groves. Operations for 1926. Commerce Reports, March 12, 1928, p. 711.

*Sources For Labor Historians*, by Eugene Staley. Persons and printed material and where important collections of material on history of the labor movement are located. American Federationist, March 1928, p. 282-286.

*Ten Nights in a Pullman*, by Bruce Bliven. Passenger trains west of and east of Chicago described. New Republic, March 7, 1928, p. 93-95.

*Seeing the World from the Air*, by Sir Alan J. Cobham. An illustrated article on series of long journeys by a man who seldom uses either steamships or railroads. National Geographic Magazine, March, 1928, p. 348-384.

*Value for Rate Making and Recapture of Excess Income. I-II*, by George G. Tunell. "Solution of the valuation problem," p. 140, Feb., 1928, issue. Journal of Political Economy, December, 1927, p. 725-775, February, 1928, p. 100-140.

*Motive Power Development on the Denver & Rio Grande Western Railroad*, by Paul T. Warner. An illustrated article which gives something of the history of freight and passenger equipment as well as of motive power. Baldwin Locomotives, January 1928, p. 3-28.

*Co-operation of Employers and Workers in England. "Railway co-operation"* i. e., the L. M. S. scheme, p. 60. Monthly Labor Review, December 1927, p. 57-60.

*Service Rendered the True Measure of Railway Valuation*, by Slason Thompson. The author's estimate of value under this measure is \$27,644,053,563. 32 p. Pub. by Bureau of Railway News and Statistics, Chicago, Ill. Apply.

*A Drop in Traffic*, by Rudyard Kipling. Vivid description of a Brazilian railway in which there may be found also a fine reference to Sir William Van Horne and others who have built or are operating railways regardless of topography and the weather. Liberty, February 18, 1928, p. 11-13.

## Looking Backward

### Fifty Years Ago

Western immigration has set in this winter in a way that recalls the palmy days of 1867-69, when the railroads to Kansas and other border states had a passenger traffic that resembled that of Eastern trunk lines, and west-bound business was much larger than east-bound. Now the rush is chiefly to Kansas and Minnesota. The railroads profit doubly by this immigration, first by carrying the immigrants and their household goods, and second by selling them land.—*Railroad Gazette*, March 15, 1878.

George Westinghouse, Jr., through his counsel, has filed a bill in equity in the United States Circuit Court at Pittsburgh, Pa., against the Emlenton, Shippensburg & Clarion (now part of the Baltimore & Ohio), alleging an infringement of the patent on the Westinghouse air brake, vacuum engines and other appliances for checking the speed of trains in making stops.—*Railroad Gazette*, March 15, 1878.

Those in charge of the Kansas Pacific (now part of the Union Pacific), propose the creation of a government commission to manage the different Pacific railroads, and especially the Union Pacific. They ask that this commission fix rates and settle all questions in regard to the pro-rating of traffic between roads.—*Railroad Gazette*, March 15, 1878.

### Twenty-Five Years Ago

There are now not less than 8,500 miles of new railroad either under contract or under construction, with 2,780 miles additional on which it is expected that work will be undertaken during the Spring or Summer. It is now certain that the mileage to be constructed in 1903 will be greater than in 1902.—*Railway Age*, March 20, 1903.

Sharp competition among several railroads has led the government to award the contract for the transportation of marines between Chicago and the Pacific Coast to the Union Pacific at the low rates of one-fourth cent and one-sixth cent per man per mile. The 2,300 miles of transportation will be furnished for \$5 per man for parties of between 39 and 100 and \$3.12 per man for parties of 100 and more.—*Railway and Engineering Review*, March 14, 1903.

### Ten Years Ago

In a decision handed down in the United States district court for the Western district of Arkansas the two-cent passenger fare provision of the Oklahoma state constitution, litigation over which has been pending since 1909, was permanently enjoined. An order issued by the Oklahoma state corporation commission in which the commission took jurisdiction over freight and passenger rates within the state was also enjoined permanently.—*Railway Review*, March 16, 1918.

The establishment of the Division of Finance and Purchases of the Railroad Administration, was announced by Director-General McAdoo on March 7. The central advisory purchasing committee will be composed of Henry B. Spencer, vice-president in charge of purchases of the Southern, Samuel Porcher, general purchasing agent of the Pennsylvania, and George G. Yeomans, general purchasing agent of the New York, New Haven & Hartford.—*Railway Age*, March 15, 1918.

The bill providing for the compensation of the railroads and prescribing the terms and conditions under which government control is to be exercised, was passed by the Senate on March 13, having been passed previously by the House. It provides that government control shall extend not to exceed 21 months after the proclamation of peace and gives the Interstate Commerce Commission final authority in the matter of rate making.—*Railway Age*, March 15, 1918.

## Odds and Ends of Railroading

"Well", said the Irate Passenger, "I see from the ads that they are 'putting color in the kitchen' and rainbow tiling in the bathroom and just last week I had to buy my secretary a new green desk and a purple typewriter. I wonder how much longer engines and passenger cars are going to stay black, or dark and dirty green—probably until undertakers take to wearing pink Prince Alberts."

Among the peculiar station names are those of Orestod, Colo., and Dotsero. The first is on the Denver & Salt Lake, the second, 41 miles away, on the Denver & Rio Grande Western. If the proposed Moffat transcontinental line is consummated, it is proposed to build a new line between the two. The peculiarity of the names is that *Orestod* is *Dotsero* spelled backwards, or vice versa. The problem of which is spelled forwards and which backwards should be absorbing as which came first, the hen or the egg.

"In a recent issue," writes E. Sherman, "you referred to the handwriting characteristic of telegraphers with a well deserved lament at its passing. My first boss was an old key pounder who had left the service and my admiration of his handwriting led him to tell me a few things about 'the fist.' According to him, the first task of the tyro of forty years ago was to learn the fist; in consequence many long hours of practice were put in. Some of the principles he worked on were to start letters at the top, whenever possible; to join words as much as possible; to write quickly; and above all to write legibly."

### Add Dickensiana

"There is also a Trotwood, Ohio," writes H. M. Waybright, "on the Pennsylvania, taken from David Copperfield by an admirer of Dickens seventy years ago."

### A British Railway Family

John Mead of Tondu, Wales, is said to be conductor of a Great Western Railway train on which his five sons are, respectively, engineer, fireman and brakemen.

### A Crisis, and Criticism, from Cackle Corner

Old timers who had the experience of trying to placate aroused and indignant farmer-owners of livestock whose delicate systems were considerably upset by the Iron Horses of pioneer days, will get a reminiscent chuckle from the following Postoffice Department press release:

The proprietor of the "Cackle Corner Poultry Farm," located at Garrettsville, Ohio, feels that he has a grievance against the United States air mail planes. In a letter received by Postmaster General New, the owner of this chicken farm blames the decrease of his egg yield to the low flying planes which appear over his farm every week or so, causing his hens to pile up and injure each other. In this frightened state, he says, the hens refuse to lay the usual number of eggs and he is afraid that his business will be ruined if the planes continue their low flying.

"I am a poultry raiser keeping about 2,500 leghorn hens," says the proprietor of the poultry farm in his letter to the Postmaster General. "About once in two or three weeks an airplane, sometimes it is a U. S. mail plane, flies over my place so low that the hens become so frightened that they pile up, thus injuring each other, and my egg yield drops one or two hundred eggs per day and by the time I get them back to normal along comes another low flying machine and sends the egg yield down again. I dare say a small flock would not be harmed as much as the larger flocks, but the loss to me is so great that I fear it may put me out of business and I wondered if the planes could not be requested to fly higher."

The Postmaster General has notified the National Air Transport, which has the contract for the New York-Chicago air mail route and which passes over the farm of the poultry dealer at Garrettsville, suggesting that the planes of the company ascend a little higher when they reach that town.

### An Accommodating Accommodation Train

"On the return trip from Old Forge Thursday the school bus, in attempting to turn out for an approaching car, got too far off the beaten roadway and mired itself in the snow to such an extent that it was impossible to get out on its own power. Fortunately it was close to the railroad and a passing freight train very accommodately stopped, hitched a rope on the rear of the bus and backed up and soon had it back on the highway ready for travel. No damage was done and there was no danger, the trouble being that the wheels of the bus could not get traction."—*The Adirondack Arrow*, Old Forge, N. Y.

### An Added Attraction for Passengers

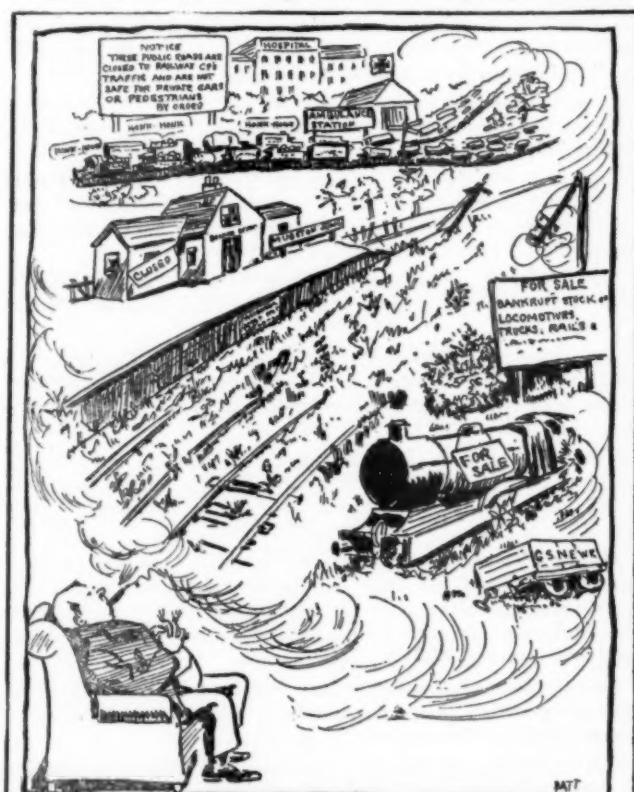
A card bearing the following inscription is being handed to Pullman passengers on a branch line in New York State by "a deaf musician," whose weird attempts to translate opera on a violin are heartrending:

#### To WHOM IT MAY CONCERN

"Through an accident I lost my hearing. I am unable to get a position in an orchestra, but I will play a solo for you here. I would appreciate it very much if you will help me make an honest living. Thanking you for a donation, Yours Gratefully, A DEAF MUSICIAN."

### Motor Competition in England

The British railways, too, have their troubles because of the growth of highway transport. In order more effectively to meet this competition they themselves are seeking authority

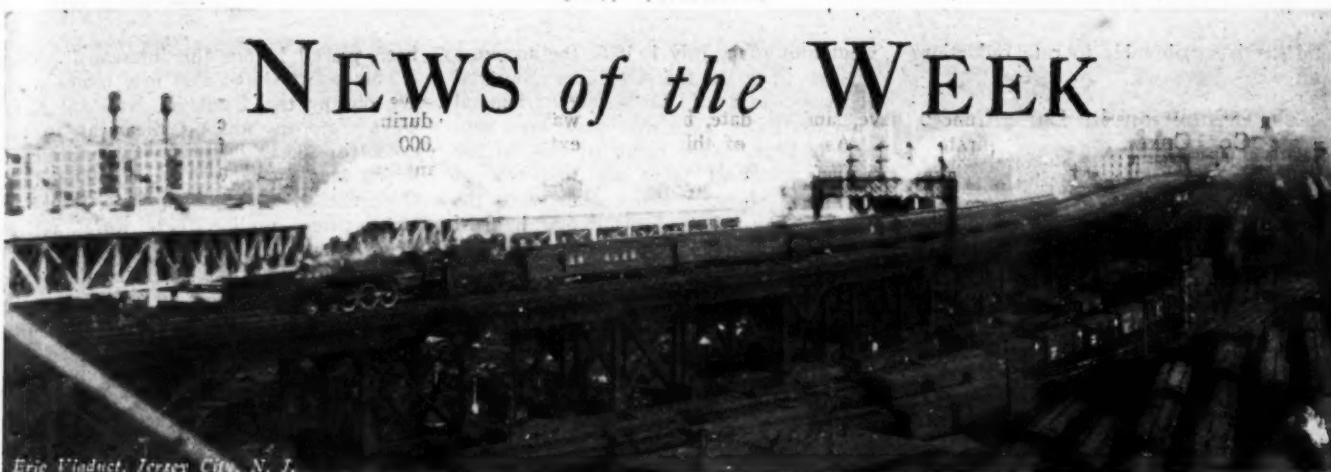


THE DREAM OF THE ROAD TRANSPORT "BOSS."

From the *Railway Review* (England)

in Parliament to operate on the highways. In this effort they are being actively opposed by independent motor vehicle operators. The accompanying cartoon is an expression from the leading British railway union paper.

# NEWS of the WEEK



THE GREAT NORTHERN has applied to the Board of Railroad Commissioners of Montana for permission to abandon its Cutbank engine terminal. It is planned to run locomotives between Havre, Mont., and Whitefish, a distance of 256 miles, without change.

THE PENNSYLVANIA will operate a special train from Chicago to Atlantic City, N. J., on June 18 to accommodate members of the Mechanical and the Motor Transport divisions of the American Railway Association and members of the Railway Supply Manufacturers Association who will attend the meetings at Atlantic City on June 20 to 27. The train will leave Chicago at 1:10 p. m. central time, and will arrive at Atlantic City at 10:30 a. m. eastern time on June 19.

## Railway Wage Statistics for December

The number of railway employees reported to the Interstate Commerce Commission as of the middle of the month of December was 1,660,338 and their total compensation for the month was \$235,518,145, according to the commission's monthly summary of railway wage statistics. Compared with the returns for the corresponding period of 1926, the number of employees reported shows a decrease of 113,526, or 6.4 per cent, and the total compensation shows a decrease of \$17,421,346, or 6.9 per cent.

## Western Outlet for Peace River

The Brule or Obed route is the best for a Pacific Coast outlet for the Peace river country in northwestern Alberta, according to E. M. M. Hill, reconnaissance engineer of the Canadian National, in a report tabled in the House of Commons at Ottawa this week by Charles A. Dunning, Minister of Railways and Canals.

Grades by the Peace pass route, agitated for by a section north of Peace river, and by outside interests, cannot be reduced below 2 per cent except at prohibitive cost, Mr. Hill finds. The engineer, however, suggests a survey of Peace pass in order to afford conclusive answer to the proponents of that route. He also advises a survey of the Monkman pass

which, he asserts, possesses some distinct advantages. He further recommended immediate construction of a branch line to Pouce Coupe and extension of the existing North Peace branch of the Edmonton, Dunvegan & British Columbia.

## Wage Increase on the T. & P.

Shop mechanics and apprentices of the Texas & Pacific and the Texas Pacific-Missouri Pacific Terminal Railroad of New Orleans, members of the Association of Mechanical Department Employees, have been granted wage increases of 2 cents and 1 cent per hour respectively under the terms of a new wage agreement negotiated at Dallas, Tex., on March 5. About 1,700 employees of the Texas & Pacific and about 210 employees of the New Orleans terminal are affected by the wage increase.

## Business Publisher Wins Advertising Award

The Harvard Award for Distinguished Services to Advertising (1927), familiarly known as the "Bok Award," has been presented to James H. McGraw, president of the McGraw-Hill Publishing Company, publishers of business and technical journals. The award takes the form of a gold medal bearing the inscription "for distinguished personal service rendered American commerce and industry through raising the standards of advertising." The award is made annually by a jury appointed by the dean of the Harvard Graduate School of Business Administration.

## Pullman Porters' Strike Vote Threat

A strike vote by members of the Brotherhood of Sleeping Car Porters is expected within the next few weeks, according to A. P. Randolph, general organizer of the brotherhood. The strike vote, it is hoped, will force the United States Board of Mediation to recognize an "emergency situation" in interstate commerce, and cause the board to appoint arbitrators and to hold hearings in the matter of increased wages for sleeping car porters who assert that they desire tipping to be abolished and a sufficient

wage increase granted them to take the place of tips now received. The action toward taking the strike vote has been brought about, according to Mr. Randolph by failure of the Interstate Commerce Commission to issue an order forbidding the Pullman Company to permit tipping.

## The C. P. R. in 1927

With gross earnings at the highest level since the inflation year of 1920 and the second greatest in history the Canadian Pacific, in its report on the results of the operations for the twelve months ended December 31 last shows the lowest net revenue in three years, the figures showing a decline in net revenue of \$5,300,000 from the 1926 figures. The increase in operating expenses more than kept pace with the rise in gross, while fixed charges also increased.

The current statement differs from its predecessors of recent years in that the special income has been added to the summary of accounts in order to show gross results before deduction of fixed charges and dividends. Previously the special income account had been shown separately with a fixed proportion of the year's ordinary dividends charge against it.

Special income showed a considerable gain over that of 1926, and, at \$11,876,560, was the best in the history of the company.

The showing on the common shares was 12.07 per cent, as compared with 14.12 in 1926, 12.52 in 1925, and 11.01 in 1924.

The income account figures are compared in the following:

	1927	1926
Gross earnings.....	\$201,145,751	\$198,025,592
Oper. expenses.....	161,630,180	153,080,465
Net earnings.....	\$ 39,515,571	\$ 44,945,127
Special income.....	11,876,560	11,056,271
Total income.....	\$ 51,392,131	\$ 56,001,398
Fixed charges.....	15,378,867	14,676,359
Surplus.....	\$ 36,013,264	\$ 41,325,039
Pension fund.....	600,000	600,000
Net revenue.....	\$ 35,413,264	\$ 40,725,039
Preferred dividend.....	4,005,944	4,005,944
Balance.....	\$ 31,407,320	\$ 36,719,095
Ordinary dividends....	26,000,000	26,000,000
Surplus.....	\$ 5,407,320	\$ 10,719,095
P.C. on ord. stock....	12.07	14.12

The difference in the proportion of gross

and net is attributable to rate reductions and wage increases.

### Ask Injunction in Lake Cargo Coal Case

Counsel for 500 coal companies of West Virginia, Kentucky, Virginia and Tennessee petitioned the federal court at Charleston, W. Va., on March 14 for an injunction to restrain the Interstate Commerce Commission from enforcing its order refusing to permit proposed lower lake cargo coal freight rates from Southern bituminous fields.

The district court for Southern West Virginia fixed next Monday for a hearing. In the application for the restraining order, in addition to the Interstate Commerce Commission, several Southern railroads were named as defendants. These carriers included the Louisville & Nashville, Norfolk & Western, Chesapeake & Ohio and the Cincinnati, New Orleans & Texas Pacific. The bill seeks to enjoin the roads from putting the commission's order into effect.

Southern carriers, the operators set forth, made a voluntary reduction in lake cargo schedules after a cut had been ordered in the Northern territory. It was asserted that the Southern roads acted "in the lawful exercise of their rights" to "preserve their tonnage and to protect their net revenues."

"The report of the commission dated Feb. 21, 1928, in the investigation and suspension proceeding," the bill continued, "did not find against this contention of the defendant railway companies as to reasonableness, but did not find that the proposed rates had not been 'justified.'"

"The order of the commission is null and void because the commission did not merely exert the power conferred upon it by law to correct an unjust and unreasonable rate, but made the order in the exercise of an assumed power to prohibit a rate just and reasonable in itself, for the service performed and lawfully fixed by the railroad, because it deemed such rate inequitable to other shippers and railroads in other districts, and that in doing so the commission misconstrued the law and exceeded its authority and deprived these plaintiffs of their rights under the law."

### C. N. R. Earnings in 1927

Charles A. Dunning, Minister of Railways and Canals, tabled in the House of Commons at Ottawa this week a preliminary report of the Canadian National Railways for the year 1927. The report is issued in this way to facilitate the customary consideration of such matters by the special committee of Parliament which deals with Canadian National affairs. The figures thus given are subject to the issuance of the final certificate by the government auditors, after which the annual report will be printed and distributed in the usual way.

This preliminary report shows a net operating revenue of \$42,113,976, which is more than sufficient to pay the interest on the funded debt due the public investors, which in 1927 amounted to \$40,448,274.

In accordance with the provisions of the Maritime Freight Rates Act, which

went into effect July 1, 1927, the accounts of the lines of the Canadian National Railways east of Levis and Diamond Junction have, since that date, been separately kept. As a result of this, in the tabled statement there are two sets of earnings shown. One deals with the system as a whole for the first half of the year and with lines west of Levis and Diamond Junction for the balance of the year. The second statement has to do exclusively with lines east of Levis and Diamond Junction from July 1 to December 31, as required by the legislation of last session.

The fact that the net earnings of the Canadian National for 1927 are less than those for 1926 is due to two major factors, the reduction in grain rates on the Western Region, made effective September 12, 1927, under an order of the Board of Railway Commissioners, which decreased freight revenue by \$652,550, and the increased rates of pay and changes in working conditions under the various wage agreements. The latter is estimated to have added \$3,771,000 to the operating expenses of the Canadian National for the year. Additional labor employed, \$579,000, and increased charges other than direct labor for maintenance and operation, \$4,639,000, make up the remainder of the increase in operating expenses.

In view of the changes in the method of stating the accounts, due to the Maritime legislation already referred to, and to the exclusion of the Central Vermont figures due to receivership, it has been necessary to restate the 1926 figures for purposes of comparison, and this has been done in the following statement:—

Operating Revenue	1927	1926	Inc. or Dec.
Operating Expenses	\$256,575,724.07	\$253,376,654.54	\$3,199,069.53 Inc.
1927	1926	Inc. or Dec.	
\$214,461,747.62	\$205,472,649.88	\$8,989,097.74 Inc.	
Net Operating Revenue	1927	1926	Inc. or Dec.
\$ 42,113,976.45	\$ 47,904,004.66	\$ 5,790,028.21 Dec.	
Operating Ratio	1927	1926	
83.59	81.09		

The decrease in eastern lines freight revenue, caused by the 20 per cent rate reduction, amounted to \$931,809.89 for the six months ended December 31, 1927. The legislation of last year provided that the deficit on eastern lines, as segregated, should be provided for by the government. The operating revenues on these lines for the six months' period, amounted to \$12,128,570, and the operating expenses, \$14,713,852 leaving a net deficit from net operation of \$2,585,282, to which must be added the usual rental and other charges, making a total deficit of \$3,264,695, as compared with \$2,453,704 for the similar period of 1926.

In addition to the changes in the structure of the accounts already referred to, the operating figures for the Central Vermont lines are not this year included in the general statement, the reason for this being that owing to the serious floods of last fall and the expenditures necessary in connection with the rehabilitation of the Vermont lines, the administration of the Central Vermont is now in the hands of a receiver, particulars of which have already

been placed before the interested public.

The report shows that new issues were put out by the Canadian National Railways Company during the year to the extent of \$83,396,000, sixty-five million of which was guaranteed by the Dominion Government. As against these issues of eighty-three million there were retirements totalling \$27,494,508, leaving a net increase in funded debt held by the public of \$55,901,492. There were no loans by the Dominion Government to the Railway, and the increase in Dominion of Canada account consists almost exclusively of unpaid interest due the Government and charged into the debt of the Railway. This interest item amounted to \$32,190,648 for the year under review.

### Railroads Charged with "Conspiracy" To Force Down Price of Coal

An effort to place on the railroads a large share of the responsibility for the labor troubles in the bituminous coal fields was made by John L. Lewis, president of the United Mine Workers, in his testimony before the Senate committee on interstate commerce on March 7. Mr. Lewis was the first witness called at the hearing held in connection with the committee's investigation of conditions in the bituminous coal fields. He charged that the demands of the railroads for lower fuel costs and their efforts to reduce the wages of mine workers so that they could not be used as a measure by maintenance of way and other employees seeking wage advances, had "crystallized into a practical conspiracy to accomplish cheap coal," saying that the "boldness of the railroad purchasing power is the most amazing development in modern business annals." As far back as 1924, he said, coal operators had used the demand of the railroads for cheaper coal as argument for a modification of the Jacksonville wage agreement by which wages would be reduced, and he said that "in every wage conference since the joint wage movement was organized the railroads had directly or indirectly had representatives present actively working to block the progress of the coal miner."

He also asserted that no economics had been served by shifting railroad fuel contracts from a union field operating under the Jacksonville agreement to a non-union field where wages were lower, if a fair charge for the transportation of the coal be added to the price.

As a part of a "program" he suggested, Mr. Lewis asked Congress to amend the interstate commerce act "so as to prevent the railroads from practicing methods designed to exploit the bituminous industry, further depress wages, and destroy the miners' union".

Mr. Lewis also made the point that railroad rates were fixed by the Interstate Commerce Commission when the prices paid by railroads for coal were much higher than at present and he said the reduction ordered by the commission in the lake cargo case in rates from the Pennsylvania and Ohio mines to the lake ports ought to enable the operators in those

fields to pay the Jacksonville wage scale. Counsel for the miners' union said that 50 witnesses would be called to prove that a "conspiracy" exists among the railroads to force down wages and depress the price of coal, and several small operators were called who testified that a purchasing agent of the Pennsylvania had told them that it "would not pay to any operator a price that would justify the Jacksonville scale." On cross-examination it was brought out that the railroad had refused to pay the price asked by certain mines because it was purchasing for lower prices elsewhere.

The charges made by Mr. Lewis were denied on March 14 by W. C. Bower, manager of purchases and stores of the New York Central, who testified that neither he nor the railroad company had been in any conspiracy agreement or understanding with any other railroad to exert bargaining power to depress prices of railroad fuel or to favor non-union operators or miners. Also he said he had never received any instruction, suggestion or intimation from President Crowley that he should have any agreement or understanding with other railroads with respect to these matters or that he should employ the bargaining power of the system or any member of it to depress fuel prices.

#### Railway Mechanical Library at Penn State

A unique collection of books and periodicals dealing with railway mechanical engineering has been set aside at the library of the Pennsylvania State College, for the use of students and engineers interested in transportation. This collection, known as the Edward Livingston Coster Memorial Library in Railway Mechanical Engineering, was established in 1926 by Mrs. Edward L. Coster in memory of her husband, the late Edward L. Coster, of Katonah, N. Y. Mr. Coster was an engineer of independent means who devoted much time to the analysis of problems in locomotive operation.

It is proposed to add many outstanding technical books pertaining to other phases of transportation and to maintain a complete file of the proceedings of the principal railway mechanical organizations. Contributions of literature from railroad officers will be welcome. Inquiries regarding material available or arrangements for loans may be addressed to Prof. A. J. Wood, head, department of mechanical engineering, or, to the Librarian, Pennsylvania State College, State College, Pa.

#### Chicago Produce Terminal Company

The Illinois Central and the Atchison, Topeka & Santa Fe have applied to the Interstate Commerce Commission for a charter for the Chicago Produce Terminal Company which will take over the terminal at Chicago. Following the filing of the application all trunk lines in Chicago have been asked to participate on equal terms in the ownership, control and use of the facilities and after the granting of the application the roads

accepting will become joint and equal shareholders with the Illinois Central and the Santa Fe in the company which will provide terminal service for all produce shipments into Chicago.

The terminal is one mile in length and occupies about 110 acres. More than \$6,000,000 has already been invested in the terminal and its ultimate development will represent a total of about \$12,000,000. The major facilities consist at present of four inter-connected railway yards with an aggregate capacity of 1,825 cars, a modern icing plant which can ice 40 cars at a time and a well-equipped auction house which already has accommodations for a peak of 145 carloads. At the north end of the auction house are two sales rooms which are leased to fruit auction companies. The construction of a banana house will be started in the near future and plans are under way for a poultry shed, a cold storage warehouse and another auction house.

For the convenience of the produce trade in handling transactions with the railroads a joint freight agency, to which 21 railroads are parties, is maintained in the terminal.

#### B. & M. Board Felicitates Retiring Chairman

Homer Loring closed a four-year task of directing the rehabilitation of the Boston & Maine on March 13 when his resignation as a member of the board and of its executive committee was accepted by the railroad's board of directors. He resigned last week as chairman of the executive committee. With the statement that under Mr. Loring's direction, "there has been developed a new Boston & Maine Railroad," the board of directors adopted the following resolution:

##### "Resolved that

"In accepting Mr. Loring's resignation, which it does with real regret, the Board wishes to put on record its appreciation of the services which he has rendered to the Boston & Maine Railroad during the last four years; services which have shown qualities and have yielded results which are difficult if not impossible to overestimate. Under his direction there has been developed a new Boston & Maine Railroad."

Mr. Loring will be succeeded on the board of directors by Philip R. Allen, president of Bird & Son, Inc., and until last fall chairman of the transportation committee of the Boston Chamber of Commerce, and on the executive committee by Louis M. Atherton of Swampscott, Mass., who is already a member of the board of directors, and as chairman of the executive committee by Thomas Nelson Perkins, whose election was announced last week with the statement that President George Hannauer would be the executive head of the railroad.

A further statement of the railroad follows:

"The withdrawal of Mr. Loring from the Boston & Maine Railroad, now complete, comes after the approval by the Massachusetts Legislature and by Governor Fuller of the project which Mr. Loring conceived and directed, by which the Boston & Maine is to have a New North Station, with sports coliseum above.

"In the past four years of Mr. Loring's direction, the Boston & Maine has found new strength in many directions. Improvements in service have extended over a wide range, with Boston & Maine freight schedules operating on faster time and with closer connections to speed up the movement of New England's freight as much as 48 hours; with passenger service improvements which include the inauguration of the 'Minute Man,' 'Pine Tree Limited,' 'Flying Yankee,' 'Red Wing,' 'Ambassador' and others of the Boston & Maine's new group of crack named trains, and a substantial speeding up also of almost every other passenger train on the railroad. There have been improvements to the railroad's plant, of which the North Station, Boston, will be the latest instance, this list of improvements including the big new freight classification yards, with the most modern equipment, at Boston (now nearing completion), at Mechanicville, N. Y., and at White River Junction, Vt.-Westboro, N. H., the enlargement of the Hoosac tunnel, general office building at East Cambridge permitting consolidation of office forces, rock ballasting of roadbed, heavier bridges and enlarged clearances to permit the use of heavier power, together with the recent addition of new equipment of which 10 big new switching engines are now in service and 20 new heavy fast freight and passenger engines are on order, the introduction of motor rail cars, of motor buses, and of motor trucks as modern methods of developing improved and more efficient transportation.

"All these improvements were effected in a period within which the Boston & Maine's financial results showed a considerable and steady improvement until the floods hit the railroad last fall. From a net income of \$2,107,739 for the year 1924, when Mr. Loring joined the Boston & Maine, the financial result improved steadily so that in 1925 this figure was increased to \$5,468,909, in 1926 it was \$6,405,078, with the floods of last fall preventing any real comparison for 1927.

"The financial reorganization which Mr. Loring completed brought to the railroad \$13,000,000 of new funds through the cooperation of stockholders in subscribing to new prior preference stock, and an extension of 15 years in the maturities of \$40,000,000 of bonds. The reorganization which this represented is said to comprise the largest railroad financial readjustment on record without resort to court action. There was accomplished also within the past year refinancing advantageous to the railroad on \$30,000,000 of bonds formerly held by the government."

AN AMENDMENT to the Hoch-Smith resolution to include products of fisheries with agricultural products and livestock in the paragraph which directs the Interstate Commerce Commission to effect with the least practicable delay such lawful changes in the rate structure as will promote their freedom of movement "at the lowest possible lawful rates compatible with the maintenance of adequate transportation service," was favorably reported to the Senate on March 8 by Senator Metcalf, of Rhode Island, from the committee on interstate commerce.

## Traffic

The annual meeting of the Associated Traffic Clubs of America will be held in San Francisco on June 12 and 13.

During 1927 the Western Weighing and Inspection Bureau inspected 69,777 cars of fruits and vegetables at 11 large destination points in the west, of which 17.2 per cent or 12,004 cars contained damaged lading. The damage in 5,496 or 45.8 per cent of these cars was due to decay, over-ripeness and field or orchard diseases while 20.3 per cent was due to improper stowing or bracing and 15.1 per cent to rough handling. Freezing in transit accounted for 5.4 per cent, field frost 4.9 per cent, pilferages 4.4 per cent and improper containers 2.7 per cent.

The Inland Waterways Corporation will establish a four-day rail and water fast freight schedule between Chicago and the Twin Cities on April 2. Freight will be shipped in special cars over the Illinois Central to Dubuque, Iowa, from which point it will be carried by water to St. Paul and Minneapolis. The service will employ an expanded service on the upper Mississippi division of the Mississippi Barge Line with sailings from St. Louis for St. Paul on Mondays and Thursdays. Barges will leave Dubuque Tuesday and Saturdays, making the trip from that point to St. Paul in three days.

### Mexican Tours

The Chicago & Alton, the Missouri Pacific, the Texas & Pacific, and the National Railways of Mexico will run an all-expense personally conducted tour through Mexico, leaving Chicago and St. Louis on March 25 and returning on April 14. The tour, which will be limited to 125 persons, will pass through Nuevo Laredo, Monterrey, Mexico City, Cuernavaca, Orizaba, Teotihuacan, Guadalajara, San Luis Potosi, Tampico, Monterrey, and return. Several side trips also are included. This is the second attempt made to conduct this tour from the United States into Mexico, the first being made last year when plans were interrupted by internal disorders in Mexico.

### Railroads Move Million Cars Of Fruits and Vegetables

Approximately a million cars of fruits and vegetables move annually over the railways of the United States. This is brought out in a bulletin by the Bureau of Railway Economics based on a study of the rail movement of the principal fresh fruits and vegetables during 1924, 1925 and 1926. It deals with 33 items, 16 of which are fruits and 17 are vegetables.

The shipments of fruits and vegetables combined amounted to 943,932 carloads in 1924, 949,421 carloads in 1925, and 1,010,724 carloads in 1926, or an average of 968,025 cars annually during the three years. The states leading in shipments of fruits in the order named are—Calif-

fornia averaging 180,741 cars annually; Florida, 54,284 cars; Washington, 40,574 cars; New York, 35,633 cars; Georgia, 32,517 cars, and Virginia, 14,580 cars. Approximately three-fourths of the total shipments of fresh fruits originated in these six states.

California also leads in shipments of vegetables. The shipments from that state amounted to 52,963 cars annually, followed by New York with 47,223 cars; Maine, 39,805 cars; Virginia, 33,094 cars; Minnesota, 29,838 cars; Florida, 29,153 cars; Texas, 24,513 cars; Colorado, 24,003 cars; Wisconsin, 22,584 cars; Michigan, 22,194 cars, and Idaho and New Jersey with 17,135 and 15,906 cars, respectively. These twelve states in the aggregate originated nearly three-fourths of the total shipments of fresh vegetables.

Of the individual commodities California ranks first in the shipments of cherries, grapes, pears, plums and prunes, lemons, oranges, cantaloupes, asparagus, cauliflower and lettuce. It is also the largest shipper of mixed deciduous fruit, mixed vegetables and of "other melons" (melons other than cantaloupes and watermelons).

Florida leads the list in shipments of grapefruit, string beans, celery, cucumbers, eggplant, peppers and tomatoes.

New York state is the largest shipper of cabbage, carrots, and onions, while Georgia takes the lead in shipments of peaches and watermelons; Washington, in apples; Maine in white potatoes; Virginia in sweet potatoes; Texas in spinach; Tennessee in strawberries; Minnesota in turnips, and Massachusetts in cranberries.

The bulletin also shows the seasonal movement by months of each commodity and for all commodities combined.

During the six months from December to May, the shipments of vegetables in the United States exceed those of fruits; for the four months of July to October, shipments of fruits exceed those of vegetables; while for the months of June and November the shipments are equally divided.

For fruits and vegetables combined the shipments are fairly evenly distributed over the five months from December to April. On the average 5.8 per cent of the total shipments are made monthly during these five months. After April the shipments increased gradually to a peak in October, during which month 15.2 per cent of the annual shipments are made. In November the shipments fall off to 8.2 per cent.

Commodities such as apples, citrus fruits, and all vegetables with the exception of asparagus, are shipped to some extent in every month of the year, while such commodities as cherries, grapes, peaches, plums and prunes, cranberries, strawberries, melons and asparagus, have a definite season, lasting generally from six to eight months.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for one heavy duty portable grinder, one 2-wheel vertical spindle grinder, one 1-in. by 10-in. grinder and one 2-in. by 12-in. grinder.

## Foreign

### Indian State Railways Magazine

The Indian State Railways Magazine, a monthly publication issued by the railways' central publicity bureau at Bombay, has now reached its fifth number. It contains articles describing various phases of railway service and news developments, and in addition quite a complement of articles of more general interest on India, presumably directed at prospective tourists. The printing and illustrations are of an unusually high order, the latter including not only many half-tone engravings, but also several etchings and inserted color plates.

### New Railways for Turkey

The Turkish government has let a contract for the construction of 750 miles of railways and two harbors at a cost of about \$60,000,000, to the Fox Brothers International Corporation, New York. The railways to be built will connect Kaiseria, Sivas and Tourhall, at a cost of \$15,000,000 and Sivas with Malatia and Erzeroum, at a cost of \$35,000,000. These railways will serve agricultural territory and an area reported to be rich in copper and other mineral deposits. The railroads are to be completed within six or seven years.

### Europe-Asia Railway Conference

At the Europe-Asia Railway Conference held at Riga under the chairmanship of Latvian Minister of Communications, in November of 1927, representatives of railways in Japan, China, Soviet Russia, Latvia, Estonia, Lithuania, Poland, Germany, Austria, Italy, Czechoslovakia, Belgium, and France approved the following recommendations: The issuance of a through ticket between western Europe and Asia with routing at the option of the traveler through Riga or through Warsaw; and the establishment of a central clearing and expense distributing system, with headquarters in Moscow, for handling ticket receipts.

### A London Signal Box

Or, as we should say, a tower, or cabin; and the one now referred to, as described in the Railway Gazette, (London) is being built at London Bridge station on the Southern Railway, and is to contain 311 levers (all-electric). This tower will control the movements of about 2,000 trains a day and is to be completed next June. All the signals at this terminus are to be color-light, three-aspect and four-aspect. The new cabin, which will be 113 ft. long and 16 ft. wide, with three stories, will contain a frame 70 ft. long and weighing 23 tons, and it will enable five existing signal-boxes, containing 615 mechanical levers, to be dismantled.

Two and a half miles of track (from London Bridge to Bricklayers' Arms Junction) as well as the intricate work-

ing in the Central section station (11 sets of rails), the Low Level station (four sets) and the High Level station (seven sets), will be under its control. The staff to be employed in the new box will consist of 16 signalmen and eight "signal lads."

The color-light signaling system on the Southern Railway will be extended with the opening of this box, to include both the stations at London Bridge and for a considerable distance beyond, the cost of the work being £150,000 (\$750,000).

### Malay Railway Operating Results

The Federated Malay States Railways, with a total mileage of 1,173, earned operating revenues in the year ended December 31, 1926, amounting to \$9,811,018. Operating expenses in that period amounted to \$6,678,028. Because new lines of railroad in the states of Kelantan and Pahang were not opened for traffic at the end of 1926, capital expenditure for construction of these lines, amounting to \$1,693,141, were not taken into account in 1926 operating results. Rolling stock in operation on the Federated Malay States at the end of 1926 consisted of 199 locomotives, 4,587 freight cars and 402 passenger cars.

### Railway Developments in Russia

New regulations affecting the relationship between railroads and shippers in the United Soviet States of Russia have been put in effect and provide for the right of a central committee to regulate the transport of freight, this committee having charge of the priority of shipments, the refusal of any car of shipments, the selection of routes, the regulation of time, payment of demurrage and the disposal of unclaimed freight.

The government, which made provisions in 1924 and 1925 for changes in car building plants to meet requirements for building a larger, American type freight car, has begun a program for the building of 16,500 of the larger type car. In 1927, 1,200 large type cars were constructed. The construction of self-propelled passenger cars equipped with Diesel motors for operation on branch lines, and in interurban and suburban service is being studied. The Putiloff Works have designed and made a Diesel engine of 1,500 hp. to be used for this purpose.

The Commissariat of Transportation has made a five year plan for railway construction. A considerable part of this plan is the completion of the lines on which construction was commenced during the war. Excluding the Black sea line, the total length of these lines is about 1,300 miles. The new lines contemplated are from Saratov to Millerovo, Bezenchuk to Ershov, Uralsk to Orenburg, Orenburg to Bugulma to Kazan and Orenburg to Ufa to Perm in old Russia. Also lines will be built to connect the Don Basin, Krivoy Rog and the central districts. The latter lines are for the quicker distribution of coal to the consuming centers. In Siberia new lines contemplated are the Turkestan-Siberian line, a line to Tobolsk and to extend the Petropavlovsk line to Akmolinsk.

## Equipment and Supplies

### Locomotives

THE ATCHISON, TOPEKA & SANTA FE is inquiring for 15 locomotive tenders.

THE MICHIGAN & LIMESTONE CHEMICAL COMPANY has ordered 2 six-wheel switching locomotives from the Baldwin Locomotive Works.

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE contemplates buying 8 Mountain type locomotives.

### Freight Cars

THE SEABOARD AIR LINE is inquiring for 500 steel underframes.

THE SOUTHERN PACIFIC is inquiring for 250 automobile cars and 175 tank cars.

THE NORTHERN PACIFIC is inquiring for 50 caboose car underframes.

THE PROTANE CORPORATION, Erie, Pa., has ordered 3 tank cars of 11,000-gal. capacity from the General American Tank Car Corporation.

THE PITTSBURGH STEEL COMPANY has ordered 3 butt cars for plant service, from the Pressed Steel Company.

### Passenger Cars

THE CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC is now inquiring for ten baggage cars.

THE CHICAGO, ROCK ISLAND & PACIFIC has ordered 10 coaches from the Pullman Car & Manufacturing Corporation, 10 suburban cars from the Standard Steel Car Company; 10 baggage and 6 baggage and mail cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of February 11.

## Iron and Steel

THE PENNSYLVANIA is inquiring for 400 tons of steel for various bridges.

THE GREAT NORTHERN has divided an order for 30,000 tons of rail between the Inland Steel Company, the Illinois Steel Company, and the Bethlehem Steel Company.

THE CHICAGO & NORTH WESTERN is inquiring for 6,000 tons of structural steel for miscellaneous bridge work.

### Machinery and Tools

THE ATCHISON, TOPEKA & SANTA FE is inquiring for one 2-in. by 14-in. Norton grinder.

THE WESTERN RAILWAY OF ALABAMA has ordered a Pratt & Whitney 13 in. by 20 in. model B lathe.

THE MERCHANTS DESPATCH TRANSPORTATION COMPANY has ordered a No. 3 Pratt & Whitney die sinker.

THE ATLANTA & WEST POINT has ordered a 48-in., 500-ton double-end wheel press and a No. 3 axle lathe from the Niles-Bement-Pond Company.

THE ST. LOUIS-SAN FRANCISCO has ordered a combination journal turning and axle lathe from the Niles-Bement-Pond Company.

### Miscellaneous

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, March 19, at New York, on the manufacture and delivery of wire fence and fence posts. Bids will be received March 20 for its requirements for the line east and west of Buffalo until June 30, 1928, of fuel oil, gasoline, kerosene, longtime burning semaphore oil, turpentine substitute, coach candles, mineral seal oil, West Virginia black oil and lubricating oils. Bids will be received until March 26 for asphaltum base fuel oil.

\* \* \* \*



On the St. Gotthard Line in Switzerland

## Supply Trade

**H. S. La Barge**, manager of railway sales of the **Glidden Company**, with headquarters at Cleveland, Ohio, has been transferred to St. Louis, Mo.

**John D. Swift**, president of the **Eagle Pitcher Lead Company**, Cleveland, Ohio, has been elected chairman of the board and will be succeeded by **A. E. Dendelain**, vice-president with headquarters at Chicago.

**N. Morton Skillin** is now in charge of the Boston, Mass., office of the **Cohoes Rolling Mill Company**, Cohoes, N. Y. He succeeds P. L. Watkins, who was recently transferred to Chicago.

The **Shaw Crane-Putnam Machine Company, Inc.**, owned by **Manning, Maxwell & Moore, Inc.**, has purchased the Lamb & Nash line of sheet metal machines. The future manufacture of all machines of the Lamb & Nash line will be carried on at the Putnam Works of the Shaw Crane-Putnam Machine Company, Inc., Fitchburg, Mass.

The **National Carbon Company**, Cleveland, Ohio, has moved its branch sales office and factory from 357 West 36th street, New York, to Fourteenth and Henderson streets, Jersey City, N. J.

The **Detroit Steel Products Company**, Detroit, Mich., has opened a factory branch at 1740 East 12th street, Cleveland, Ohio. **S. M. Hathaway**, is district manager; **H. K. Strock** and **K. E. Carr** will handle industrial sales; **W. G. Brown** and **A. F. Butler** will have charge of casements and basement windows; **C. Smallwood** and **W. P. Scheuerman** will be in charge of estimating and engineering service and **O. H. Scheppan** and **A. M. Gordon** will be in charge of erection service.

### Inland Steel Company

The annual report of the Inland Steel Company and subsidiaries for the year ending December 31, 1927, shows net profits of \$6,806,894 as compared with \$7,147,704 for the previous year after interest, taxes, depreciation and contributions to the employees' fund. This is equivalent, after preferred dividends, to \$5.16 a share on the 1,182,799 shares of no par value common stock outstanding, as compared with \$5.45 a share during 1926. The amount carried to surplus in 1927 was \$3,149,897 as compared with \$3,490,706 in the previous year. Assets and liabilities amounted to \$89,080,868 as compared with \$87,102,837. Capital assets were \$53,797,068, current assets \$30,596,967 and deferred charges \$1,117,157. Capital stock amounted to \$45,000,000, the funded debt \$12,150,000, current liabilities \$4,105,017 and operating and contingent reserves \$2,556,219. The surplus amounted to \$25,269,632. The consolidated income and surplus account for the year ending December 31, 1927, follows above:

	1927	1926
Net earnings after deducting all expenses incident to operations, including charges for repairs and maintenance . . . . .	\$10,966,861	\$10,782,507
Other income (interest received) . . . . .	375,193	398,275
	<u>\$11,342,054</u>	<u>\$11,180,782</u>
Less:		
Provision for depreciation of plants . . . . .	2,435,669	1,996,187
Provision for exhaustion of minerals . . . . .	72,582	84,724
Bond interest . . . . .	674,908	703,166
Estimated federal taxes	994,000	892,000
	<u>\$4,179,159</u>	<u>\$3,676,078</u>
Deduct:		
Contributions to Employees' Savings and Profit Sharing Pension Fund . . . . .	\$358,000	\$357,000
Net profits for the year . . . . .	\$6,804,895	\$7,147,704
Surplus Dec. 31, 1926 . . . . .	\$22,119,735	\$19,830,233
Deduct adjustment in respect of properties dismantled or abandoned . . . . .	1,201,205	
	<u>\$22,119,735</u>	<u>\$18,629,028</u>
	<u>\$28,924,630</u>	<u>\$25,776,732</u>
Deduct:		
Dividends paid or declared:		
On preferred stock . . . . .	\$700,000	\$700,000
On common stock . . . . .	\$2,956,997	\$2,956,997
	<u>\$3,656,997</u>	<u>\$3,656,997</u>
Surplus, December 31, 1927, as per balance sheet . . . . .	\$25,269,632	\$22,119,735

### Youngstown-Inland Merger Abandoned

The proposed merger of the Youngstown Sheet & Tube Company and the Inland Steel Company has been abandoned following the inability of the companies to agree on certain features regarding the consolidation. The decision which was reached on March 8 precedes the meeting of the stockholders of both companies which was called for March 15 to approve the merger plans.

**A. J. Kohn**, sales and advertising director of the **Leich Electric Company**, has resigned to become industrial sales

director for the **Kodel Radio Corporation** Cincinnati, Ohio. He was born in Reeseville, Wis., on September 8, 1884 and graduated from the University of Wisconsin in electric engineering in 1906. After leaving college he entered the em-

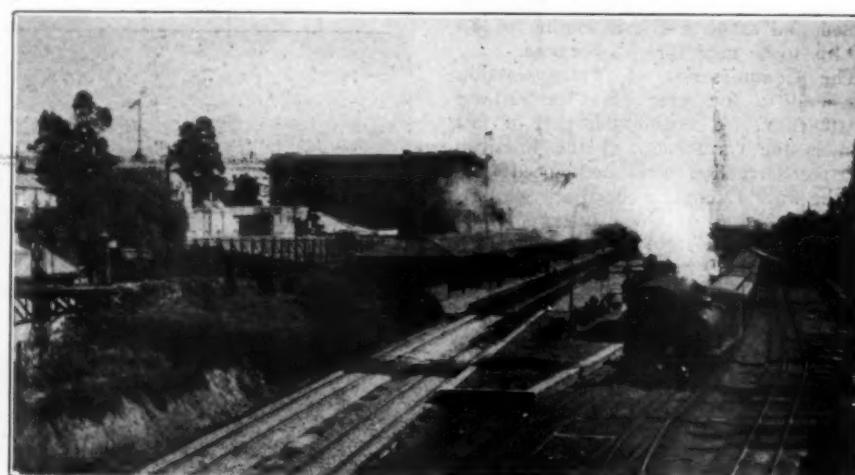


**A. J. Kohn**

ploy of the Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., and for six months worked in the various assembly and construction departments of the factory. He was then transferred to the engineering department where he was later put in charge of the electrical laboratory and later of circuit designing. In 1910 he was transferred to the sales engineering department where he was in charge of the sales of special products, including railway dispatching equipment and U. S. Government proposals and in the preparation of catalogues. In 1912, he became associated with the Leich Electric Company, Genoa, Ill., as sales and advertising manager which position he has held until his recent appointment.

### Obituary

**Walter B. Leach**, president and general manager of the Hunt-Spiller Manufacturing Corporation, Boston, Mass., died after a prolonged illness at his home in Brookline, Mass., on March 13.



*Ewing Galloway*

**South African Railways Station at Johannesburg**

## Construction

**CHICAGO, ROCK ISLAND & PACIFIC.**—The board of directors has approved plans for the immediate construction of an extension of the Amarillo-Stinnett branch from Stinnett, Tex., to Gruver, 34 miles. The terminus of this line will be 91 miles from Amarillo, Tex., and will provide transportation for a section which produces oil and wheat.

**ERIE.**—The Public Service Commission of New York has approved plans for the elimination of a grade crossing on the line of the Erie just south of the North Collins, N. Y., station.

**HIGH POINT, THOMASVILLE & DENTON.**—This company has applied to the Interstate Commerce Commission for authority to construct an extension from High Point to Winston-Salem, N. C., 20 miles.

**LONG ISLAND.**—This railroad is considering plans for the establishment and construction of a new station at DuBois avenue, between Valley Stream and Hewlett, L. I., N. Y.

**MINNEAPOLIS & ST. LOUIS.**—The city of Albert Lea, Minn., in connection with this company and the Chicago, Rock Island & Pacific, plans the construction of a reinforced concrete viaduct at Broadway avenue. A portion of the total cost, which is estimated at \$200,000, will be borne by the State Highway Commission.

**MISSOURI-KANSAS-TEXAS.**—Ellis County Tex., plans the construction of a reinforced concrete viaduct, 180 ft. in length, over the tracks of this company and Waxahachie Creek at Waxahachie, Tex. Of the total cost of \$123,000 the railroad will be called upon to pay \$24,000.

**MISSOURI PACIFIC.**—A contract for the construction of the substructure of the Baring Cross bridge over the Arkansas river at Little Rock, Ark., has been awarded to the Missouri Valley Bridge & Iron Company, Leavenworth, Kansas, at a cost of about \$275,000.

**NICHOLAS, FAYETTE & GREENBRIER.**—This company, organized in the interest of the New York Central and the Chesapeake & Ohio, has applied to the Interstate Commerce Commission for authority to build a new line from Swiss to Nallen, W. Va., 29 miles, to reach timber and coal deposits. At the same time the New York Central and Chesapeake & Ohio applied for authority to acquire control of the company by purchasing its \$400,000 capital stock and it was stated that the construction will be temporarily financed by the proceeds of the stock issue and by loans of not to exceed \$3,600,000 advanced from time to time in equal amounts by the two companies. The Chesapeake & Ohio also applied for authority to operate over the Kanawha & West Virginia, from Belva to the town of Swiss, West Virginia.

**NORTHERN PACIFIC.**—A contract for the construction of a four-track reinforced concrete bridge over Walnut street, Yakima, Wash., has been let to E. J. Dunnigan, St. Paul, Minn. The cost of this project, which includes raising about 1 mile of track and depressing the street, is estimated at \$250,000.

**PECOS & NORTHERN TEXAS.**—This company has applied to the Interstate Commerce Commission for authority to build an extension from Hale Center to Parmenter, Tex., 66 miles, probably to be leased and operated by the Panhandle & Santa Fe.

**PITTSBURGH & WEST VIRGINIA.**—The Interstate Commerce Commission has assigned for oral argument at Washington on April 13 this company's application for authority to build an extension from Cochran's Mill to Connellsburg, Pa., 38 miles. C. V. Burnside, assistant director of the commission's Bureau of Finance, has submitted a proposed report recommending denial of the application.

**SOUTHERN PACIFIC.**—A contract for the relocation of 19 miles of line on the branch between Bowie, Ariz., and Globe, has been awarded to the Utah Construction Company, San Francisco, Cal. This contract, which involves an expenditure of about \$2,400,000, involves the grading, construction of new track and bridges and relocation of stations.

**ST. LOUIS-SAN FRANCISCO.**—The Board of Public Service of St. Louis, Mo., has awarded a contract for the construction of a viaduct over the tracks of this company at Arsenal street, St. Louis, to Joseph Kesl and Son, Edwardsville, Ill., at a cost of about \$365,000. This viaduct, which will cross the River des Peres as well as the Frisco tracks, involves an expenditure of approximately \$531,000. About \$300,000 of the cost will be borne by the Frisco.

**WABASH.**—This company and the Board of County Road Commissioners of Wayne County, Michigan, have reached an agreement extending until 1932, under which all the grade crossings of the Wabash with main highways will be eliminated. The railroad and the county are to contribute \$200,000 each per year to a fund from which the cost of these improvements will be made, involving important highway grade crossings in the vicinity of Detroit. It is understood that the first elimination project to be carried out under this agreement will be at the intersection of Ford street in Oakwood, Detroit, with the Wabash, the Pennsylvania and the Michigan Central. This work, which it is planned to start during the Spring of 1928, will involve the construction of a viaduct over the railroad tracks.

### Kenora & Red Lake

**KENORA & RED LAKE.**—A private bill has been introduced in the Ontario Legislature providing for the construction of a railway from Kenora to the Red Lake mining area in northwestern Ontario and to cost approximately \$8,000,000. The road would be completed within five years and would be built by the Kenora Paper Mills, Ltd.

## Financial

**CHICAGO & NORTH WESTERN.**—*Final Valuation.*—The Interstate Commerce Commission on March 9 made public a 638 page final valuation report on the property of this company and affiliated companies, as of 1917, finding the final value for rate-making purposes of the property owned and used for common-carrier purposes by the C. & N. W. to be \$487,870,700. Property owned but not used was assigned a value of \$131,722 and that used but not owned a value of \$5,054,426. The final value of the Chicago, St. Paul, Minneapolis & Omaha was found to be \$87,129,680, for the property owned and used, \$19,476, for that owned but not used and \$42,907 for that used but not owned. The owned and used figures for other subsidiaries were as follows: Pierre & Fort Pierre Bridge Company, \$1,144,000; Pierre, Rapid City & Northwestern, \$4,533,054; Sioux City Bridge Company, \$1,030,700, and Wyoming & Northwestern, \$3,130,154. In referring to the protest filed by the carriers the report says that they refrained from presenting evidence as to many objections of a general nature such as have been considered and overruled in many previous decisions but that "in the event the principles and methods upon which the tentative valuations are based are changed and the carriers so desire, they may make application for the necessary detailed revisions." The North Western contended that its investment in road and equipment properly stated as of valuation date is not less than \$508,321,494. The amount stated on its books was \$388,671,654. In the tentative valuation it was stated that if certain readjustments were made this amount would be increased to \$433,220,466 and the final report allows an increase to \$436,460,609, which is said to embrace \$255,381,028 of recorded money outlay, the remainder representing, for the most part, the par value of securities issued or assumed. The cost of reproduction new and cost of reproduction less depreciation of the property other than land, owned and used by the North Western for common-carrier purposes, was placed at \$462,450,634 and \$359,997,093, respectively. The present value of lands and rights owned and used for carrier purposes was found to be \$96,472,891. The North Western on valuation date had an outstanding capitalization of \$370,132,258.

**GULF, COLORADO & SANTA FE.**—*New Director.*—J. W. Terry, a member of the law firm of Terry, Cavin and Mills, Galveston, Tex., has been elected a director of this company, succeeding J. P. Cowley, who, until his appointment as acting superintendent of the Galveston division, was assistant to the general manager.

**SEABOARD AIR LINE.**—*Decline in Security Prices.*—A substantial decline in the prices of the bonds and of the preferred and common stocks of the Seaboard Air

Line during the past week or two, has not been justified by actual conditions in the opinion of L. A. Powell, Jr., president. Mr. Powell has issued a statement saying:

"There is, in my opinion, no ground for apprehension that the company will not earn its fixed charges by a substantial margin in 1928. The net earnings available for fixed charges in 1927, exclusive of adjustment bond interest, which is not a fixed charge, were in excess of such charges by approximately \$1,280,000. A comprehensive survey of business conditions in the company's territory justifies a favorable outlook and it is expected that 1928 will show increasing net revenues. Expenses have been curtailed by substantial economies.

"I believe the liquidation in the market of Seaboard Air Line Railway securities has passed the bounds of reason. The road has no immediate funded maturities to meet, its property is being maintained adequately and the railway will be able to take full advantage of the inevitable development in its territory."

**SHIPPERS' CAR LINE—Equipment Trust.**—Freeman & Co., and Stroud & Co., Inc., have announced an offering of \$716,000 5 per cent equipment trust certificates, series E. This company is a subsidiary of the American Car & Foundry Company. The equipment includes 600 tank cars valued at \$955,000. The certificates mature serially from April 1, 1928 to April 1, 1942 and are priced to yield 5 to 5.25 per cent according to maturity.

**TEXARKANA UNION STATION.—Trust Certificates Authorized.**—The Interstate Commerce Commission has authorized the Missouri Pacific, the Texas & Pacific, the Kansas City Southern, the Texarkana & Fort Smith, the St. Louis Southwestern and the St. Louis Southwestern of Texas to assume obligation and liability in respect to \$1,500,000 Texarkana Union Station trust certificates, series A, to be sold at not less than par to Kuhn, Loeb & Co.

#### Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

Arkansas & Louisiana Midland	\$673,299	1918
Minneapolis, Northfield & Southern	.....	1,690,000
		1920

#### Dividends Declared

Augusta & Savannah.—2½ per cent, payable July 5 to holders of record June 15.  
Beech Creek.—1 per cent, quarterly, payable April 2 to holders of record March 15.  
Lehigh Valley.—Common, \$0.87½, quarterly; preferred, \$1.25, quarterly, both payable April 2 to holders of record March 17.

Pere Marquette.—Common, 1½ per cent, quarterly; common, 2 per cent, extra; both payable April 2 to holders of record March 16. Prior preference, 1½ per cent, quarterly; preferred, 1½ per cent, quarterly; both payable May 1 to holders of record April 13.

Southern Railway.—Common, 2 per cent, quarterly, payable May 1 to holders of record April 2. Preferred, 1½ per cent, quarterly, payable April 16 to holders of record March 20.

Vermont & Massachusetts.—3 per cent, payable April 7 to holders of record March 6.

#### Average Price of Stocks and of Bonds

	Last	Last
Mar. 13	week	year
Average price of 20 representative railway stocks..	117.61	116.96
Average price of 20 representative railway bonds..	96.95	96.76
		106.63
		93.34

## RAILWAY AGE

### Railway Officers

#### Executive

**J. M. Perkins** has been elected vice-president of the Frankfort & Cincinnati, with headquarters at Frankfort, Ky.

**Clarence G. Bowker**, general manager of the Grand Trunk Western, with headquarters at Detroit, Mich., has in addition been elected president of the Detroit Terminal Railroad, succeeding **E. D. Bronner**, who is vice-president of the Michigan Central, with headquarters at Detroit. Prior to his election to president Mr. Bowker was vice-president of the Detroit Terminal.

**C. M. Dukes**, who has been promoted to assistant vice-president of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Chicago, has been in charge of labor matters in the operating department of the Milwaukee for the past 13 years. Mr. Dukes was born at Marion, Iowa, on November 16, 1868, and entered railway service in April, 1887, as a freight brakeman on the Milwaukee, Lake Shore & Western (now part of the Chicago & North Western) at Ashland, Wis. In November of the same year he became a freight brakeman on the Northern Pacific at Glendive, Mont., later serving successively as a freight brakeman on the Oregon Railroad & Navigation Company (now the Oregon-Washington Railroad & Navigation Company) at Portland, Ore., on the Union Pacific at Pocatello, Idaho, and as a switchman on the Burlington, Cedar Rapids & Northern (now part of the Chicago, Rock Island & Pacific) at Cedar Rapids, Iowa. Mr. Dukes' service with the Milwaukee started in May, 1891, when he became a freight brakeman at Ottumwa, Iowa. He was promoted to conductor in October, 1899, and in April, 1907, he became system general chairman representing the Brotherhood of Railway Trainmen on the Milwaukee, with headquarters at Cedar Rapids. Mr. Dukes returned to the railroad in October, 1915, as assistant to the general manager, with jurisdiction over labor matters and with headquarters at Chicago. His title was changed to assistant to the chief operating officer in December, 1925, and his promotion to assistant to the vice-president became effective in February, 1928.

**Horace F. Smith**, who was elected senior vice-president of the Nashville, Chattanooga & St. Louis, effective March 1, has completed more than 63 years of railroad service, nearly 30 of which have been spent as the head of the traffic department of the N. C. & St. L. Mr. Smith was born on April 30, 1848, at Mayville, N. Y., and was educated in the Elgin (Ill.) public schools. He entered railway service on February 10, 1865, with the United States Military Railroads as clerk and telegraph operator at Huntsville, Ala., being pro-

moted to agent at Knoxville, Tenn., in May of the same year. After the return of the East Tennessee & Georgia and the East Tennessee & Virginia (both parts of the Southern) to private control Mr. Smith served these companies at Knoxville until December, 1865, when he entered the service of the Adams Express Company. He re-entered railway work in July, 1866, as clerk and agent



Horace F. Smith

on the Louisville & Nashville at Louisville, Ky., and in the following year he was appointed agent and terminal superintendent of the Atchison, Topeka & Santa Fe at Kansas City, Mo. He remained with the Santa Fe for the next six years and in February, 1883, he was appointed superintendent of terminals of the L. & N. Later he became an assistant division superintendent and then he was transferred to the freight traffic department where he was division freight agent and then assistant general freight agent. From 1890 to 1895, Mr. Smith was connected successively with the traffic departments of the East Tennessee, Virginia & Georgia and the Queen & Crescent and when those two railroads were merged as the Southern he was appointed general freight agent, with headquarters at Washington, D. C. His first service with the N. C. & St. L. began on July 1, 1898, when he was appointed traffic manager, with headquarters at Nashville, Tenn. In 1906 he was in addition elected vice-president. During federal control of the railroads he acted as traffic manager of the Tennessee Central and the Birmingham & North-Western (the latter now part of the Gulf, Mobile & Northern). Mr. Smith is credited with organizing the Southern Weighing and Inspection Bureau in 1914, serving as its first chairman.

#### Financial, Legal and Accounting

**C. E. Eberle**, general auditor of the Gulf & Sabine River, with headquarters

at St. Louis, Mo., has in addition been appointed secretary, succeeding **C. W. Reighard**, deceased.

**Arthur E. Simon**, chief assistant United States attorney at Seattle, Wash., has been appointed assistant western counsel of the Northern Pacific, with headquarters in the same city.

**F. A. Reid**, general freight and passenger agent of the Chicago, Springfield & St. Louis and the Jacksonville & Havana, with headquarters at Springfield, Ill., has in addition been appointed assistant treasurer.

**W. J. Seaman** has been elected secretary, treasurer and auditor of the San Antonio, Uvalde & Gulf, with headquarters at San Antonio, Tex. **H. V. Cooper** has been appointed superintendent of freight loss and damage claims of this company and other subsidiaries of the Missouri Pacific, with headquarters at Palestine, Tex.

## Operating

**W. R. McPherson** has been appointed acting superintendent of the Salt Lake division of the Denver & Rio Grande Western, with headquarters at Salt Lake City, Utah.

**Alfred O. Herman**, chief clerk to the general manager of Eastern lines of the Baltimore & Ohio, has been appointed assistant to the general manager, Eastern lines, with headquarters at Baltimore, Md., succeeding **C. G. Martin**, deceased.

**H. R. McKee**, assistant superintendent of the Panhandle division of the Atchison, Topeka & Santa Fe, with headquarters at Wellington, Kan., has been promoted to superintendent of the Arkansas River division, with headquarters at La Junta, Colo., succeeding **D. W. Orr**, retired.

**G. R. Whisler**, superintendent of the Jacksonville & Havana, with headquarters at Jacksonville, Ill., has been appointed superintendent of the Chicago, Springfield & St. Louis, with headquarters at Springfield, Ill. **B. O. Scott** has been appointed superintendent of the Jacksonville & Havana to succeed Mr. Whisler.

**S. Wertheim**, superintendent of sleeping and dining car and news service of the Canadian Pacific, at Toronto, Ont., has been promoted to general superintendent of that department for the Western lines, with headquarters at Winnipeg, Man. **Mr. Wertheim** succeeds **H. F. Mathews**, who has been appointed general manager of hotels for the Western lines of the Canadian Pacific with headquarters at Winnipeg, Man.

**E. M. Pence**, assistant trainmaster and division operator on the Cincinnati division of the Pennsylvania, has been transferred to the Chicago Terminal division, with headquarters at Chicago, succeeding **C. E. Walton**, who has been assigned to special duty in the office of the gen-

eral superintendent of transportation of the Western region at Chicago. **T. J. Harper**, assistant trainmaster on the Cincinnati division at Cincinnati, Ohio, has in addition been appointed division operator, succeeding Mr. Pence. **F. H. Krick** assistant trainmaster on the Columbus division has been promoted to trainmaster of that division, with headquarters at Columbus, Ohio, replacing **J. A. McClintock**, who has been appointed freight trainmaster on the Pan Handle division at Pittsburgh, Pa. Mr. Krick has been replaced at Columbus as assistant trainmaster by **J. P. Shea** who was yardmaster on the Ft. Wayne division. **P. R. Christopher**, acting assistant trainmaster on the Chicago Terminal division, has been promoted to assistant trainmaster on that division.

## Traffic

**E. J. Hawerkost**, city passenger agent of the Erie, at Chicago has been appointed general western passenger agent at the same point.

**H. C. Baird** has been appointed assistant general freight and passenger agent of the Oklahoma City-Ada-Atoka, with headquarters at Oklahoma City, Okla.

**R. J. Tyner**, chief clerk to the general freight agent of the Missouri-Kansas-Texas at Dallas, Tex., has been appointed general agent of the Toledo, Peoria & Western, with headquarters in that city.

**J. M. Ballingall**, assistant to the general freight agent of the Spokane, Portland & Seattle at Portland, Ore., has been promoted to assistant general freight agent, with headquarters at the same point.

**J. M. Strupper**, who has been promoted to assistant freight traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., first entered the service of that railroad in 1912 in the freight department in Texas.



J. M. Strupper

Previous to that time he had been connected with the freight departments of the Texas & Pacific and the Southern Pacific. After being advanced successively through a number of minor positions in the freight traffic department of

the Frisco in Texas, Mr. Strupper was promoted to assistant general freight agent, with headquarters at St. Louis, in 1924. His promotion to assistant freight traffic manager in charge of rate adjustments in the southwestern territory became effective on March 1.

**Robert N. Nash** who has been promoted to freight traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., first entered railway service at the age of 17 years as a messenger in the local freight office of the Atlantic Coast Line at Wilmington, N. C. He was born on February 26, 1880, at Tarboro, N. C. Besides his service as a messenger in the local freight office of the Atlantic Coast Line Mr. Nash's early railway experience included time spent as a messenger in the office of the general superintendent at Wilmington, as a file clerk and in other minor positions in the freight traffic department. On January 1, 1910, he was advanced to chief clerk in the freight traffic department and in the following



Robert N. Nash

year he was promoted to assistant general freight agent. Mr. Nash was appointed assistant to the freight traffic manager in charge of the interstate commerce department of the Frisco on August 1, 1913, and during federal control of the railroads he acted as chief clerk to the traffic manager of the same railroad. Upon the return of the roads to private control he was advanced to first assistant general freight agent at St. Louis, becoming general freight agent at St. Louis in 1923. Mr. Nash was again promoted to assistant freight traffic manager, with headquarters at St. Louis, in 1925. His promotion to freight traffic manager became effective on March 1.

**Thomas D. Elliott** who has been promoted to general western agent of the Boston & Maine, with headquarters at Chicago, was born on November 17, 1891, at Ames, Iowa, and at the age of 15 years entered railway service in the Wabash freight station at Kansas City, Mo. Mr. Elliott trucked freight and worked in other minor positions in the Wabash freight station at that point for

the next five years and at the end of that time he was advanced to chief clerk. In March, 1917, he was engaged by the American Smelting & Refining Company to handle freight through congestion and embargoes from St. Louis to Baltimore, Md. In May, 1917, he was transferred to Salt Lake City, Utah, and on January 1, 1921, he was promoted to supply manager, supervising the handling of supplies at all plants. He was appointed traveling freight agent of the Wabash at Cleveland, Ohio, on March 1, 1922, where he remained until March



Thomas D. Elliott

1, 1926, when he was appointed general agent of the Boston & Maine at the same point. Mr. Elliott was promoted to general western agent at Chicago on February 1.

**Sam S. Butler** who has been promoted to general freight traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has completed more than 24 years of service in the traffic department of that railroad. Mr. Butler was born on August 25, 1875, at Murfreesboro, Tenn., and entered railway service on November 1, 1890, as a clerk in the office of the auditor of the Texas & Pacific at Dallas, Tex. For the next 10 years he was successively clerk, relief agent and traveling auditor on the Texas & Pacific and in 1890 he became clerk to the commercial agent of the Frisco at Dallas. Later he served as soliciting freight agent, traveling freight agent and commercial agent at that point and on April 1, 1907, he was

promoted to general agent at Ft. Smith, Ark. After three years as general eastern agent, with headquarters at New York, Mr. Butler was appointed traffic



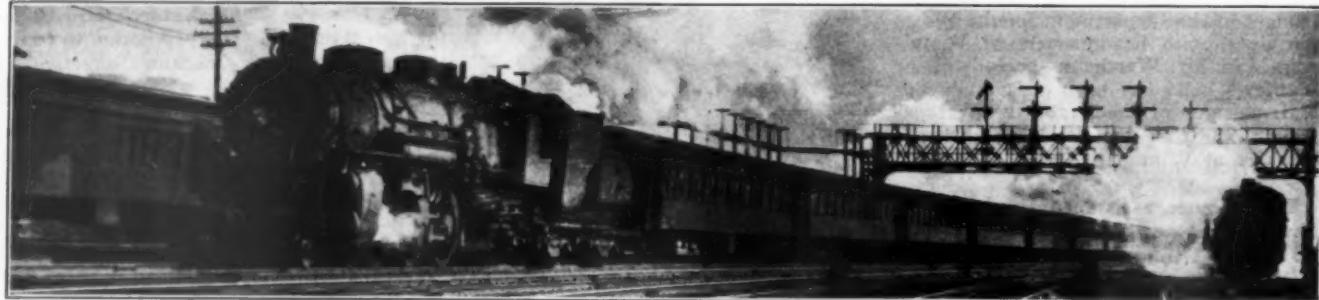
Sam S. Butler

manager of the Gulf Coast Lines, with headquarters at Houston, Tex., on January 1, 1912. He returned to the Frisco in 1915 as general southwestern freight agent at Houston. From 1916 to 1920 Mr. Butler was successively general agent for the Frisco at Pittsburgh, Pa., assistant general freight agent at St. Louis and general freight agent at the same point. He was promoted to freight traffic manager in 1920 and to the position of general freight traffic manager on March 1.

### Mechanical

**B. P. Johnson**, general master mechanic on the Northern Pacific, with headquarters at Livingston, Mont., has been promoted to mechanical superintendent of the Eastern lines, with headquarters at St. Paul, Minn., succeeding **T. J. Cutler**, who retired on pension March 15 because of ill health. **G. F. Egbers**, master mechanic at Spokane, Wash., has been promoted to general master mechanic to replace Mr. Johnson and **R. P. Blake**, master mechanic at the Mississippi Street shops at St. Paul, has been transferred to Spokane to succeed Mr. Egbers. **J. B. Neish**, who has been on leave of absence, has returned as master mechanic at the Mississippi Street shops.

\* \* \*



An Erie Suburban Train Entering the Jersey City Terminal

### Engineering, Maintenance of Way and Signaling

The New York Central Lines have announced the establishment of a Train Control Bureau, which will have charge of the maintenance and further installation of automatic train control. **H. S. Balliet**, engineer of train control, will head the bureau, under the direction of **C. C. Paulding**, vice-president, public relations.

### Special

**W. P. Stiles** has been appointed superintendent of dining cars and hotels of the Western Pacific, with headquarters at Oakland, Cal., succeeding **C. E. Benton**, who has resigned.

**H. F. Mathews**, formerly general superintendent of the Canadian Pacific sleeping, dining and parlor car services, has been appointed general manager of the Canadian Pacific hotels and bungalow camps west of Fort William, Ont. He thus assumes charge of nine hotels and 12 bungalow camps in western Canada.

### Obituary

**Harry H. Baker**, special agent in the general passenger department of the Pennsylvania, with headquarters at New York, died suddenly on March 8 at his home in Jersey City, N. J. Mr. Baker was 60 years of age.

**John C. Thurman**, general auditor of the Green Bay & Western, with headquarters at Green Bay, Wis., who died at Wausau, Wis., on February 27, was born on August 8, 1862, at New Albany, Ind. For a number of years Mr. Thurman was engaged as a traveling auditor for the John I. Blair banks in Kansas and Nebraska, after which he entered railway service in 1891 as auditor of the St. Louis & Hannibal, with headquarters at Hannibal, Mo. In June, 1896, he was appointed general auditor of the Green Bay & Western, remaining in that position continuously until the time of his death. Mr. Thurman was also general auditor of the Keweenaw, Green Bay & Western and the Ahnapee & Western, both subsidiaries of the Green Bay & Western.